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A reclassification of the European Tetrastichinae (Hymenoptera: Eulophidae), with a revision of certain genera

M. W. R. de V. Graham

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Synopsis

The systematic position, characters and phylogeny of Tetrastichinae are discussed. The genera of the European Tetrastichinae are revised and keyed, of which 28 are recognized as valid. Nine genera (*Apotetrastichus*, *Kolopterna*, *Anaprostocetus*, *Xenaprostocetus*, *Thripastichus*, *Holcotetrastichus*, *Chaenotetrastichus*, *Petalidion*, *Mischotetrastichus*) and one subgenus (*Coriophagus*) are newly described. The European species of *Apotetrastichus*, *Minotetrastichus*, *Neotrichoporoides*, *Sigmophora*, *Kolopterna*, *Anaprostocetus*, *Aprostocetus* and *Xenaprostocetus* are revised, keyed and illustrated. Of the 373 nominal species discussed, 268 are considered to be valid, of which 113 are described as new. Three hundred and twenty one primary types have been examined and 31 lectotypes and 10 neotypes are designated; 17 new synonyms are established.

Introduction

Tetrastichinae undoubtedly form the largest subfamily of the chalcidoid family Eulophidae. Even within the confines of Europe, well over 300 species have come to my notice. Since the subfamily ranges from subarctic to tropical regions, the total number of existing species must be vast. They offer many features of interest for research. A number are important in biological control of pests. Many are relatively easy to rear, and in the case of gregarious endoparasitic species, can often be obtained in large numbers for laboratory work. They are invaluable subjects for the study of interspecific and host relationships, behaviour, and geographical variation and distribution. Their value for behavioural studies has been realized by van den Assem in the Netherlands, particularly courtship behaviour which will have important bearings on the evolution of the group. The taxonomy of Tetrastichinae is still in a somewhat rudimentary state. Most European species are lumped in the magazine genus *Tetrastichus*, which is certainly a heterogenous entity. The aim of the present work is to revise the classification, to attempt to divide the group into more natural genera, and to examine the relationships of these and their component species-groups. The results are embodied in keys, diagnoses and descriptions. Although the study is based upon European species, considerable attention has been given to a number of extralimital species, in the hope that this may give the keys a greater predictive value than would otherwise be the case. Owing to the size of the subfamily, it is not possible to deal with it in one part: I hope that the remaining 15 European genera, marked with an asterisk in the Key, will be dealt with in a second part.

Historical review

The majority of species now placed in Tetrastichinae were described by Walker (1838–40, in *Cirrospilus*) who evidently did not consider *Aprostocetus* Westwood (1833) as a valid genus. In 1846 he transferred these species to *Tetrastichus* Haliday, 1844, which had been proposed for a single species, *Cirrospilus attalus* Walker. Walker forgot, or ignored, the fact that he had himself published the generic name *Tetrastichus* in 1842, with *Cirrospilus lycidas* Walker as type-species.

Ratzeburg (1844: 1848) proposed *Trichoceras* and *Geniocerus* as new genera.

Förster (1856) proposed Tetrastichoidae as a family name for the group now regarded as the subfamily Tetrastichinae (but with some alien elements included). He subsequently published descriptions of several new genera and species of the group, but otherwise little work was done upon it until Thomson's revision.

Rondani 1967b; 1870; 1877) described the genera *Sigmophora*, *Oomyzus* and *Myiomisa*.

Thomson (1878) adopted the generic name *Tetrastichus* Haliday, including in it *Aprostocetus* Westwood, *Lonchentedon* Ratzeburg, *Geniocerus* Ratzeburg, and *Oxymorpha* Förster, as well as some species now known to belong to *Syntomosphyrum* Förster and *Melittobia* Westwood. He also adopted Förster's family name, though in the form of a tribe, Tetrastichina. Thomson's work represents the first attempt at a natural arrangement of the species and forms the basis of modern work on the group. He divided the genus into a number of species-groups, defined by a kind of outline key.

Kurdjumov (1913) recognized *Melittobia* Westwood, *Crataepus* Förster, *Hyperteles* Förster, *Tetrastichus* Haliday, *Geniocerus* Ratzeburg, and *Aprostocetus* Westwood as valid genera. He published keys to the European species of the three latter genera. In some respects his work represents a retrograde step from that of Thomson, as the species were not segregated into species-groups within the genera.

Girault (1913–36) described a number of genera and species of Tetrastichinae, chiefly from Australia and America. He suffered from the disadvantage of working outside the mainstream of European research, and in pursuing an independent line he misinterpreted such genera as *Tetrastichus* and *Aprostocetus*. He ignored the character of the number of setae on the submarginal vein and attached more importance to the number of anelli and claval segments in the antenna. More recently the type-species of his genera have been re-examined by Bouček, who will eventually publish an account of them. A number of Girault's tetrastichine genera are valid.

Burks (1943) published a very useful monograph of the North American species of *Tetrastichus* (s.l.) with a key to the species and short though good descriptions, employing some new characters. No attempt was made to arrange the species in groups. He listed *Geniocerus* Ratzeburg as a synonym of *Tetrastichus* Haliday but by implication regarded *Aprostocetus* Westwood as distinct, though on different grounds from those adopted in the present work.

Erdös (1954) followed Kurdjumov (1913) in recognizing *Aprostocetus*, *Geniocerus* and *Tetrastichus* as valid genera, but divided the two latter genera into species-groups based upon those of Thomson. He also regarded *Baryscapus* Förster as a valid genus, and added two genera of his own, *Pachyscapus* Erdös and *Gyrolachnus* Erdös. In some respects his work represented an advance upon previous contributions. He published descriptions of additional new species at later dates.

Graham (1961*a*; 1961*b*) placed nearly all the European species provisionally in *Aprostocetus* (s.l.), arranged in species-groups based on those of Thomson with some additions and modifications. The name *Aprostocetus* Westwood was adopted on grounds of priority although the possibility was recognized that other generic names placed as synonyms might also be valid if *Aprostocetus* were to be later subdivided. Graham also pointed out that *Cirrospilus lycidas* Walker had been designated as type-species of *Tetrastichus* Walker, 1842, which had priority over *Tetrastichus* Haliday, 1844. He treated *Tetrastichus* Walker as a species-group of *Aprostocetus*. A number of new characters were employed in the papers on the group published by Graham in 1961 and subsequently.

Some workers on Tetrastichinae wished to preserve the name *Tetrastichus* Haliday, 1844, and to reject *Tetrastichus* Walker, 1842. An appeal was submitted to the International Commission on Zoological Nomenclature, which ruled in 1965 that the name *Tetrastichus* Walker was invalid. Following this, Domenichini (1965) adopted *Tetrastichus* Haliday for the whole of *Aprostocetus* (s.l.) as understood by Graham (1961*b*). This procedure was adopted for reasons of convenience, although nomenclaturally invalid. The suppression of *Tetrastichus* Walker, however, had the advantage that the name *Tetrastichus* Haliday was made available for a group of species which I now consider of generic value. *Aprostocetus* is still available as the valid name for the largest genus of Tetrastichinae.

Domenichini (1966*a*) placed the majority of European Tetrastichinae in *Tetrastichus* Haliday, treating *Aprostocetus* Westwood as a synonym in spite of its priority. He adopted most of the species-groups proposed by Graham (1961*b*), though with some changes. For example, he united the species-groups of *caudatus* and *lycidas* under the species-group name of *strobilanae*. This makes the limits of the group too wide and in the present work I maintain my earlier concept of two species-groups, those of *caudatus* and *lycidas*. Domenichini provided a key to the European genera and to most of the species-groups of *Tetrastichus*. In his key to genera he included *Winnemana* Crawford, subsequently shown by Graham (1975) to be a synonym of *Cirrospilus* Westwood in Eulophinae; and *Hyperteles* Förster, here regarded as a species-group of *Aprostocetus*. In subsequent publications Domenichini maintained his systematic arrangement.

Bouček (1977) published a useful tentative key to the world genera of Tetrastichinae, including one new genus. He employed provisionally the generic name *Tetrastichus* Haliday for the largest group of the subfamily. It should be noted that the genus *Seyrigina* Risbec (1952), included by Bouček in Tetrastichinae, does not belong to that subfamily but to Eulophinae, perhaps near *Hemiptarsenus* Westwood. I examined the type-species of *Seyrigina* in Paris in 1976. Bouček's concept of the genus was based upon another species later placed erroneously in *Seyrigina* by Risbec.

Kostjukov (1977) discussed the morphology of *Tetrastichus* (s.l.) and raised a number of the species-groups recognized by Graham and Domenichini to subgeneric rank, as well as proposing several new subgenera. They included *Cecidotetrastichus* Kostjukov, *Tamarixia* Mercet, *Oomyzus* Rondani, *Sphenolepis* Nees, *Eutetrastichus* Kostjukov, *Minotetrastichus* Kostjukov, and *Burksia* Fullaway, all of which are treated as genera in the present work. Later (Kostjukov, 1978*b*) he published keys to the genera and species of Tetrastichinae found in the European part of the U.S.S.R. These represent the most up-to-date account of the group so far published.

Biology

Most species of Tetrastichinae are parasitic, though phytophagy is known (*Aprostocetus elongatus*). Secondary phytophagy occurs in some species whose larvae live as inquilines in the galls produced by their hosts; primary phytophagy is suspected in a few cases but is not proved.

Endoparasitism is more frequent than ectoparasitism. Both endophagous and ectophagous species may be solitary or gregarious parasites. In the latter case a single host may support a few or many individuals of the parasite (in *Aprostocetus xanthopus* 2000 parasites have been obtained from a single host chrysalis). Hyperparasitism occurs in some cases (Particularly in the genus *Eutetrastichus*) and may be obligate or facultative. The overall impression emerging is that while some species are oligophagous, many appear to be polyphagous to a greater or lesser degree. Further research may show, of course, that apparent polyphagy in some cases conceals the existence of two or more 'sibling species' of parasites. Hosts are Insecta and a few Arachnida. Some groups of Tetrastichinae are attached to particular taxonomic groups of hosts, such as *Tamarixia* species which attack only Psylloidea. Many species parasitize only Diptera: Cecidomyiidae (e.g., most *Aprostocetus* species), others seem to prefer Coleoptera. Often, however, the final choice of host is clearly influenced by ecological preferences. Thus *Minotetrastichus* species attack leaf-mining larvae, whether these belong to Lepidoptera, Coleoptera, or Hymenoptera. Some groups seem to prefer host larvae living in galls, irrespective of the order to which the gall-maker belongs. Others mainly parasitize hosts which have exposed eggs or free-living larvae (e.g., *Tetrastichus*, *Oomyzus*).

The sex ratio varies considerably in Tetrastichinae. In most species males appear to be less numerous than females. Iwata & Tachikawa (1966) found the percentage of males in *Tetrastichus* [=*Aprostocetus*] *hagenowii* to vary between 12·5 and 25 per cent. My analysis of field-caught material of several species suggests that this may be a common situation. On the other hand, in some species males are rare (e.g., 3·3–5·2 per cent in *Melittobia*) whilst in others partial or complete thelytoky exists. In *Tetrastichus asparagi* males have not been found in North America (Burks, 1943) but they occur in small numbers in batches reared in Europe. *Eutetrastichus amethystinus* is apparently thelytokous in Britain (Askew, 1968) but not in southern Europe where males are frequent.

Courtship behaviour in Tetrastichinae has recently been the subject of some most interesting studies by van den Assem and his colleagues in the Netherlands (see particularly van den Assem, 1975; and van den Assem *et al.*, 1982*a*; 1982*b*). The species of *Melittobia* have been extensively studied. Males have highly aberrant structure, never leave the host puparium or pupa, and attack each other on emergence. Fighting results in the survival of only a very few, or even one individual. The survivors embark upon a complicated courtship routine which has to be completed before acceptance by the females. A comparative study of the courtship behaviour of species of *Aprostocetus* and other tetrastichine genera is also being carried out, and particular attention is directed towards its possible phylogenetic implications (van den Assem *et al.*, 1982*a*). I have been privileged to follow closely the course of these investigations and to exchange views regarding questions of taxonomy of the group. Van den Assem & Putters (1980) have also recorded sonagram tracings of courtship sounds made by males of three species of Tetrastichinae.

The number of eggs laid by one female varies greatly, from a few to more than 1000 in some cases. Females often imbibe the body fluids of their host before oviposition, and some construct a feeding-tube for this purpose. Some species oviposit only in host eggs, others in both eggs and young larvae, still others in larvae and pupae. The egg stage usually lasts only a few days. The whole course of preimaginal development ranges from a few days to as much as one year (or even more under unfavourable conditions). Pupation takes place most often inside the body of the host. No cocoon is formed.

The immature stages of Tetrastichinae have been relatively little studied. In fact, the only general comparative study of larval characters in Chalcidoidea is that of Parker (1924). Larval mouthparts, which have provided such impressive results in the classification of Ichneumonidae and Braconidae, are in Chalcidoidea much more simple in structure and therefore do not afford such useful characters. Nevertheless, there is a need for further study of these and other larval characters in Chalcidoidea, including Tetrastichinae. Accounts of the immature stages of Tetrastichinae have been mainly on individual species and include the following. Askew (1968): *Tetrastichus* (now *Eutetrastichus*) *amethystinus* (Ratzeburg). Balfour-Browne (1922) and van Lith (1955): *Melittobia acasta* (Walker). Cameron (1955): *Tetrastichus* (now *Aprostocetus*) *hagenowii* (Ratzeburg). Dziurzyński (1961): detailed account of the early stages of *Hyperteles elongatus* (Förster) and *H. luteus* (Ratzeburg), with figures. These two species are here recombined into *Aprostocetus* (see below, p. 363 and p. 364). Hodkinson (1973): *Tetrastichus* (now *Tamarixia*) *actis* (Walker). Johnston (1915): *Tetrastichus asparagi* Crawford. Sundby (1957): *Tetrastichus* (now *Aprostocetus*) *femoralis* Sundby. Szelényi (1940): figured the egg and larva of *T. jablonowskii* Szelényi. Viggiani (1963): *Tetrastichus* (now *Eutetrastichus*) *amethystinus* (Ratzeburg). Williams (1969): described and figured the egg and larva of *Tetrastichus* sp. near *tompanus* (Erdös). This species is described below as *Aprostocetus rumicis* sp. n. (see p. 276).

Host check-list

HOSTS	TETRASTICHINE PARASITES
Acari	
ERIOPHYIDAE	
Acaria rudis	*Aprostocetus eriophyes*
Ceciodophyopsis ribis	*A. eriophyes*
Phytoptus avellanae	*A. eriophyes*
P. tiliae	*A. eriophyes*
INSECTA	
BLATTODEA	
BLATTIDAE	
Blatta orientalis	*Aprostocetus hagenowii*
B. germanica	*A. hagenowii*
Periplaneta americana	*A. hagenowii*
P. australasiae	*A. hagenowii*
P. fuliginosa	*A. hagenowii*
ECTOBIIDAE	
Loboptera decipiens	*Aprostocetus calvus*
COLEOPTERA	
CHRYSOMELIDAE	
Cassida rubiginosa	*Aprostocetus bruzzonis*
C. vittata	*A. bruzzonis*
Cryptocephalus pini	*A. celtidis*
Pyrrhalta luteola	*A. celtidis*

Hosts	Tetrastichine parasites
COCCINELLIDAE	
Chilocorus bijugus	*Aprostocetus neglectus*
C. bipustulatus	*A. neglectus*
Coccinella septempunctata	*A. neglectus*
Exochomus quadripustulatus	*A. neglectus*
Scymnus subvillosus	*A. neglectus*
CURCULIONIDAE	
Apion apricans	*Aprostocetus rumicis*
A. curtirostre	*A. rumicis*
A. violaceum	*A. rumicis*
A. sp.	*A. constrictus, ? A. tompanus*
Orchestes spp. (see *Rhynchaenus*)	
Rhynchaenus alni	*Minotetrastichus ecus*
R. fagi	*M. ecus*
R. pallicornis	*M. ecus*
R. populi	*M. ecus, A. femoralis*
DYTISCIDAE	
Dytiscus sp.	*Aprostocetus rufus*
SCOLYTIDAE	
Phloeophthorus rhododactylus	? *Aprostocetus phloeophthori*
Tomicus minor	*A. hedqvisti*
DIPTERA	
AGROMYZIDAE	
Cerodontha pygmaea	*Aprostocetus flavifrons*
Phytomyza aprilina	*Minotetrastichus napomyzae*
CECIDOMYIIDAE	
Agevillea abietis	*Aprostocetus agevilleae*
Arnoldia (see *Arnoldiola*)	
Arnoldiola cerris	*A. domenichinii*
Asphondylia calycotomae	*Sigmophora brevicornis*
A. coronillae	*S. brevicornis*
A. cytisi	*S. brevicornis*
A. dorycnii	*S. italica*
A. dufouri	*S. brevicornis*
A. ervi	*S. brevicornis*
A. melanopus	*A. westwoodii, S. brevicornis*
A. mikii	*S. brevicornis*
A. ononidis	*S. brevicornis*
A. ulicis	*S. brevicornis*
A. verbasci	*S. brevicornis, ? A. westwoodii*
Bayeria capitigena	*A. capitigenae*
Boucheella artemisiae	*A. cecidomyiarum*
Contarinia artemisiae	*A. artemisicola*
C. lentis	*S. brevicornis*
C. medicaginis	*A. epicharmus, ? A. brachycerus, S. brevicornis*
C. pulchripes	*A. aethiops*
C. rumicis	? *A. myrsus*
C. sorghicola	*A. diplosidis*
C. tiliarum	*A. tilicola*
Craneiobia lawsoniana	*A. craneiobiae*
Cystiphora sonchi	*A. microscopicus, ? A. eleuchia*
C. sp.	? *A. atticus*
Dasineura abietiperda	*A. micantulus*
D. alopecuri	*A. emesa, A. pygmaeus*
D. brassicae	*A. epicharmus*
D. crataegi	*A. lysippe*
D. epilobii	*A. epilobiellus, A. epilobii*

HOSTS	TETRASTICHINE PARASITES
CECIDOMYIIDAE – *cont.*	
D. glechomae	*A. aega*
D. ignorata	? *A. brachycerus*
D. laricis	*A. aethiops*
D. leguminicola	*A. pausiris*, *A. zosimus*
D. papaveris	*A. epicharmus*
D. trifolii	*A. aquilus*, *A. rhacius*
D. ulmaria	*A. amenon*
Didymomyia reaumuriana (see *tiliaceae*)	
D. tiliaceae	*A. tiliaceae*
Dryomyia circinnans	*A. domenichinii*
Eumarchalia gennadii	*S. brevicornis*
Giraudiella inclusa	*A. calamarius*, *A. gratus*, *A. orithyia*
Hartigiola annulipes	*A. lycidas*, ? *A. collega*
Helicomyia pulvini	*A. metra*
H. saliciperda	*A. citrinus*, *A. tymber*
Ischnonyx verbasci	*S. brevicornis*
Iteomyia capreae	*A. pallipes*
Jaapiella medicaginis	*A. epicharmus*
J. veronicae	*A. scoticus*, *A. veronicae*
Janetiella oenophila	*Tetrastichus cecidomyiae*
J. siskiyou	*A. craneiobiae*
Kaltenbachiola strobi	*A. strobilanae*
Kiefferia pericarpiicola	*A. dauci*, *S. brevicornis*
K. pimpinellae (see *pericarpiicola*)	
Lasioptera arundinis	*A. calamarius*, *A. gratus*, *A. longiscapus*, *A. orithyia*
L. carophila	*A. dauci*
A. fabae	? *A. fabicola*
L. rubi	*A. rubi*, *A. rubicola*
Lipara lucens	*A. orithyia*
Macrodiplosis dryobia	*A. cerricola*
Massalonghia rubra	*A. alveatus*
Mayetiola destructor	*A. zosimus*
M. phalaridis	*A. zosimus*
Mikiola fagi	*A. collega*, *A. elongatus* (inquiline), *A. luteus*, *A. lycidas*
Misospatha tubifex	*A. cecidomyiarum*
Oligotrophus betulae	*A. clavicornis*, *A. escherichi*, *A. pallipes*
O. skuhravae	*A. clavicornis*, *A. pallipes*
O. tarda	*A. clavicornis*, *A. pallipes*
O. sp.	*A. constrictus*
Plemeliella abietina	*A. strobilanae*
Prolasioptera berlesiana	*A. invidus*
Putoniella marsupialis (see *pruni*)	
P. pruni	*A. grandii*
Rhabdophaga clavifex	*A. metra*
R. heterobia	*A. abydenus*, *A. salictorum*
R. marginemtorquens	*A. abydenus*, *A. torquentis*
R. rosaria	*A. abydenus*, *A. citrinus*, *A. minimus*
R. terminalis	*A. abydenus*
Rhopalomyia ptarmicae	*A. anodaphus*, *A. ptarmicae*
R. tanaceticola	*A. tanaceticola*
R. sp.	*A. artemisiae*
Schizomyia galiorum	*S. brevicornis*
Semudobia (see *Oligotrophus*)	
Thomasiella arundinis (see *Lasioptera*)	
Unidentified Cecidomyiidae species	*Minotetrastichus loxotoma*
DIOPSIDAE	
Diopsidae sp.	*Neotrichoporoides* spp.

HOSTS	TETRASTICHINE PARASITES
LONCHAEIDAE	
Dasiops latifrons	*Neotrichoporoides cynodontis*
MUSCIDAE	
Atherigona conigera	*Neotrichoporoides nyemitawus*
A. soccata	*N. nyemitawus*
TEPHRITIDAE	
Euleia heraclei	*Aprostocetus boreus*
Philophylla heraclei (see *Euleia*)	
Terellia serratulae	*A. serratularum*
Urophora jaceana	*A. serratularum*
U. solstitialis	*A. serratularum*
HEMIPTERA	
APHIDIDAE	
Undetermined aphid sp.	*Apotetrastichus postmarginalis*
CICADELLIDAE	
Ledra aurita	*Aprostocetus eurytus*
COCCIDAE	
Ceroplastes spp.	*Aprostocetus toddaliae*
C. galeatus	*A. ceroplastae*
Eulecanium rugulosum	*A. trjapitzini*
E. secretum	*A. trjapitzini*
E. sp.	*A. trjapitzini*
Kermes quercus	*A. coccidiphagus, A. leptoneuros, A. pachyeuros*
K. roboris	*A. pachyneuros*
Parthenolecanium corni	*A. trjapitzini*
Physokermes piceae	*A. trjapitzini*
P. sugonjaevi	*A. trjapitzini*
DELPHACIDAE	
Euconomelus lepidus	*Aprostocetus mandanis*
MIRIDAE	
Capsodes lineolatus	*Aprostocetus miridivorus*
HYMENOPTERA	
BRACONIDAE	
Apanteles circumscriptus	*Minotetrastichus platanellus*
Phanomeris phyllotomae	*M. ecus*
CYNIPIDAE	
Andricus anthracinus	*Aprostocetus aethiops*
A. fecundator	*A. aethiops*
A. grossulariae	*A. domenichinii*
A. ostreus (see *anthracinus*)	
Aylax jaceae	? *A. forsteri*
A. salviae	*A. forsteri*
Biorhiza pallida	*A. biorrhizae*
Callirhytis glandium	*A. glandicola*
Cynips divisa	*A. aethiops*
C. longiventris	*A. aethiops*
C. quercusfolii	*A. aethiops*
Diplolepis eglanteriae	*A. eurytomae*
D. mayri	*A. aurantiacus, A. eurytomae*
D. spinosissimae	*A. aurantiacus, A. eurytomae*
Isocolus rogenhoferi	*A. forsteri*
Neuroterus albipes	*A. aethiops*
N. numismalis	*A. aethiops*
N. quercusbaccarum	*A. rufescens*, ? *A. aethiops*
Plagiotrochus fusifex	*A. fusificola*

HOSTS	TETRASTICHINE PARASITES
CYNIPIDAE – *cont.*	
P. sp.	*A. andalusiacus*
Synergus nervosus	*A. aethiops*
S. pallicornis	? *A. aethiops*
Trigonaspis bruneicornis	*A. aethiops*
EULOPHIDAE	
Achrysocharoides splendens	*Aprostocetus ecus*
Aprostocetus elongatus	*A. luteus*
Cirrospilus unifasciatus	*Minotetrastichus ecus*
Chrysocharis ap.	*M. ecus*
Chrysonotomyia albiscapus	*M. ecus*
Pediobius saulius	*M. ecus*
Pnigalio pectinicornis	*M. ecus*
Sympiesis sericeicornis	*M. platanellus*
EURYTOMIDAE	
Bruchophagus roddi	*Aprostocetus venustus*
B. onobrychidis	*A. venustus*
Eurytoma amygdali	*A. bucculentus*
EVANIIDAE	
Evania appendigaster	*Aprostocetus hagenowii*
Zeuxevania splendidula	*A. calvus*
PLATYGASTERIDAE	
Platygaster herrickii	*Aprostocetus zosimus*
P. zosine	*A. zosimus*
PTEROMALIDAE	
Homoporus destructor	*Aprostocetus zosimus*
TENTHREDINIDAE	
Tenthredinidae spp.	*Minotetrastichus ecus*
Euura atra	*Anaprostocetus acuminatus*
E. laeta	*A. acuminatus*
Pontania viminalis	? *A. deobensis*
LEPIDOPTERA	
Unidentified leaf-miner	*Aprostocetus phillyreae*
COLEOPHORIDAE	
Coleophora laricella	*Minotetrastichus ecus*
LASIOCAMPIDAE	
Dendrolimus pini	*Aprostocetus xanthopus*
Macrothylacia rubi	*A. xanthopus*
LITHOCOLLETIDAE	
Phyllonorycter spp.	*Minotetrastichus ecus*
P. blancardella	*M. platanellus*
P. cerasicolella	*M. platanellus*
P. hauderiella (see *rajella*)	
P. millierella	*M. platanellus*
P. platani	*M. platanellus*
P. populifoliella	*M. platanellus*
P. rajella	*Mischotetrastichus petiolatus*
LYONETIIDAE	
Lyonetia clerckella	*Aprostocetus femoralis*
PHYLLOCNISTIDAE	
Phyllocnistis labyrinthella	*Aprostocetus femoralis*
P. suffusella (see *unipunctella*)	
P. unipunctella	*A. balasi*
TISCHERIIDAE	
Tischeria ekebladella	*Minotetrastichus ecus*
TORTRICIDAE	
Pseudargyrotoza conwagana	*Aprostocetus balasi*

Hosts	Tetrastichine parasites
ODONATA	
LESTIDAE	
Lestes sp.	*Aprostocetus pseudopodiellus*
ORTHOPTERA	
GRYLLIDAE	
Oecanthus nigricornis	*Aprostocetus crino*
O. pellucens	*A. crino, A. ovivorax, A. percaudatus*
O. quadripunctatus	*A. crino*
THYSANOPTERA	
PHLAEOTHRIPIDAE	
Gynaikothrips ficorum	*Thripastichus gentilei*
G. uzeli	*T. gentilei*
Hoplothrips pedicularius	*T. gentilei*
Liothrips laureli	*T. gentilei*
L. oleae	*T. gentilei*
L. urichi	*T. gentilei*

Distribution

The larger genera, such as *Aprostocetus*, *Tetrastichus* and *Eutetrastichus*, have a world-wide distribution (although *Eutetrastichus* has not yet been found in Australia). *Neotrichoporoides* has many species in Africa, Asia and Australia, and extends its range into the Mediterranean area and some of the Atlantic and Pacific islands. Its presence in South America may be due to introduction. Species of *Tamarixia* are known from all continents. *Oomyzus* and *Cecidotetrastichus* are certainly very widely distributed. *Thripastichus* and *Aceratoneuromyia* have a wide though scattered distribution. *Quadrastichodella* is an Australian genus which has been introduced into Europe and North America with eucalypts. The distribution of the remaining, mainly small, genera is not sufficiently well known for generalization. Details of the distribution of many species are given by Domenichini (1966*a*; 1966*b*).

In accordance with recent practice, only the names of the countries in which a given species occurs are listed here; exceptions are new species and a few which are rare or have only recently been recognized with certainty, and for these full data are provided.

Economic importance

Domenichini (1966*b*: 14) remarked 'Because of their parasitic specialization, high fecundity, relatively short life-cycle, and the preponderance of females in the sex ratio, the Tetrastichinae have already been successfully utilized in biological control and might be more so in the future'.

A substantial degree of success in biological control was obtained in Sulawesi by employing *Tetrastichus brontispae* Ferrière against the coconut leaf-mining beetle *Brontispa longissima selebensis* Gestro, and in the Palau Islands using the same parasite against *Brontispa mariana* Spaeth, as reported by Clausen (1958: 295). Muniappen *et al.* (1980) referred to the control of the Palau coconut beetle *B. palauensis* (Esaki & Chujo) in Guam by *Tetrastichus brontispae*. *Tetrastichus* (now *Thripastichus*) *gentilei* Del Guercio has been found an efficacious parasite of *Liothrips oleae* Costa (Del Guercio, 1911) and of *Gynaikothrips ficorum* Marchal (Bournier, 1967).

The European *Tetrastichus julis* (Walker) parasitizes larvae of beetles of the genera *Lema* and *Oulema*. *Oulema melanopus* (L.) and *O. gallaeciana* (Heyden) are cereal leaf pests; *Tetrastichus julis* was introduced to the U.S.A. with a view to combating these beetles and became established (Stehr, 1970). In America it has no hyperparasites, whilst native predators are not numerous enough, in some areas at least, to interfere seriously with its establishment. Dysart *et* *al.* (1973) considered that it was premature to attempt to evaluate its efficacy at that time, although results were encouraging.

The potentiality of *Tetrastichus* (now *Oomyzus*) *incertus* (Ratzeburg) as a parasite of the alfalfa weevil *Hypera postica* (Gyllenhal) has attracted interest in Canada and the U.S.A. Horn (1971) stated that it contributed a constant, though at that time negligible, mortality amongst alfalfa weevil larvae in New York State, but suggested that importation of greater numbers of the parasite might reduce host numbers to a tolerable level.

Tetrastichus coeruleus (Nees) (=*asparagi* Crawford) was used in Ohio in 1937 as a parasite of the asparagus beetle *Crioceris asparagi* (L.) with a partial degree of success. It continues to attract interest and recently van Alphen (1980) has described the host-relations of both *Tetrastichus coeruleus* [as *asparagi*] and a related species which attacks another asparagus beetle *Crioceris duodecimpunctata* L. The parasite of *C. duodecimpunctata* was described, as *Tetrastichus crioceridis*, by Graham (1983*b*).

Tetrastichus (now *Eutetrastichus*) *turionum* (Hartig) is the fifth most abundant parasite of the pine pest moth *Rhyacionia buoliana* (D. & S.) in Europe. Arthur & Juillet (1961) considered it valuable for control of *buoliana* and recommended it for release in North America. It is cold-hardy, requires no alternate hosts and, because many individuals of both sexes emerge from a single host, relatively few hosts would be required for establishment and it should be able to maintain its numbers when host populations are low.

Yaseen (1978) reported that a joint action by *Tetrastichus sokolowskii* Kurdjumov and two other hymenopterous parasites had recently provided an 80 per cent reduction in damage by diamond-back moth, *Plutella xylostella* (L.) in Zambia, and hoped that a similar success could be achieved in Trinidad.

Tetrastichus gallerucae (Fonscolombe) has been known for many years as an egg-parasite of the elm leaf defoliator beetle *Pyrrhalta luteola* (Müller). More recently it, and another egg-parasite of this beetle, *Aprostocetus celtidis* (Erdös), have attracted attention as possible control agents. They are currently being monitored in Europe and elsewhere by D. L. Dahlsten and L. E. Caltagirone (Berkeley, California). I have been in touch with them and have recently published (Graham, 1985*b*) a paper describing the Tetrastichine parasites of elm leaf beetles. These beetles cause considerable damage to ornamental trees in the U.S.A.

Although some Tetrastichinae have been used successfully as parasites of agricultural and forest pests, certain factors impede the success of others. The presence of hyperparasites, polyphagy on the part of the Tetrastichine, low percentage parasitism, lack of synchrony with the host, poor adaptive capacity to climatic conditions, and similar factors may reduce the efficacy of a particular parasite species, or even impede it altogether.

Finally, a conflict in particular aims in biological control may cause problems. One such case was reported by Simmonds (1949). In Mauritius there was a serious plant pest, *Cordia macrostachya* (Jacq.), which had been accidentally imported from India. A gallerucid beetle, *Schematiza cordiae* Barber (now *Metrogalleruca obscura* Degeer), is a defoliating species which seemed to merit introduction to control the plant. However, the eggs of *Schematiza* are parasitized by a *Tetrastichus* amongst other parasites; these can reduce the population of the beetle to a degree such that it cannot control the plant. Cock (1982) discussed a similar case. *Liothrips mikaniae* (Priesner) (Thysanoptera) is one of the most promising biological control agents for *Mikania micrantha*, a scrambling composite vine of the Neotropical region, which is a serious weed of plantations in South East Asia. The *Liothrips* was recommended for introduction to the latter area. However, amongst its natural enemies (in Trinidad) one is *Tetrastichus gentilei* Del Guercio, which is also an important natural enemy of pest species of thrips, e.g., the olive thrips *Liothrips oleae* Costa in the Mediterranean region. Although *T. gentilei* is not recorded for South East Asia, it was felt that its wide distribution would be a potential barrier to the success of *Liothrips makaniae* as a biological agent for controlling the pest vine. Cock concluded (1982: 532) that the use of *T. gentilei* in biological control 'points to the dichotomy of approach between those working on pest control and those working on weed control. Whereas the former will use parasitoids (or predators) with a wide range of hosts (or prey), the latter ensure that they use only narrowly oligophagous species. One can visualize a general parasitoid on introduction to a new habitat transferring its attention to some beneficial insect which helps to keep a native weed or potential weed in check. Equally, if a new suitable host is introduced to control a weed, its effectiveness can be reduced by that parasitoid'.

Taxonomic section

Material and methods

Tetrastichinae may be obtained either by field-collecting or by rearing. Random sweeping or trapping is indispensable when the maximum quantity of material or a faunistic survey is required. If time is available, more interesting and useful results can be obtained by confining one's attention to certain groups of host-plants or particular types of habitat. I have habitually segregated my catches from such restricted situations in different tubes or aspirators. By such means one learns at least something about the habitat preferences of various species, often also clues to their host-plants.

Rearing Tetrastichinae is relatively easy. Careful rearing is essential for obtaining information of permanent value. A given host-plant may support one or several potential hosts of Tetrastichinae and even a small spray or twig may harbour several hosts. Particular care is necessary with the many species that parasitize Cecidomyiidae (Diptera) (themselves often difficult to name) because more than one kind of gall formed by these hosts may be present in a sample of leaves or flower heads. I have been fortunate in having at my disposal much tetrastichine material reared by H. Vlug, W. Nijveldt and M. J. Gijswijt from carefully determined cecidomyiid hosts.

The recommendations given by Noyes (1982) on collecting and preserving chalcid material can hardly be bettered, but a few points regarding the latter may be emphasized. Tetrastichinae are rather weakly sclerotized and need careful treatment to render them suitable for study. Reared specimens should not be left to die as this causes the body to collapse and become intractably stiff. They should be left for a day or two for the cuticle to harden. For swept material, I prefer to leave it overnight in an aspirator saturated with the vapour of ethyl acetate. This leaves the specimens sufficiently flaccid to make mounting easy. If immediate mounting is not possible, specimens may be stored upon a layer of cotton wool in a paper envelope. Specimens treated in this way can later be relaxed by placing them for a short while in a laurel-tube, even after being kept for as much as 20 years.

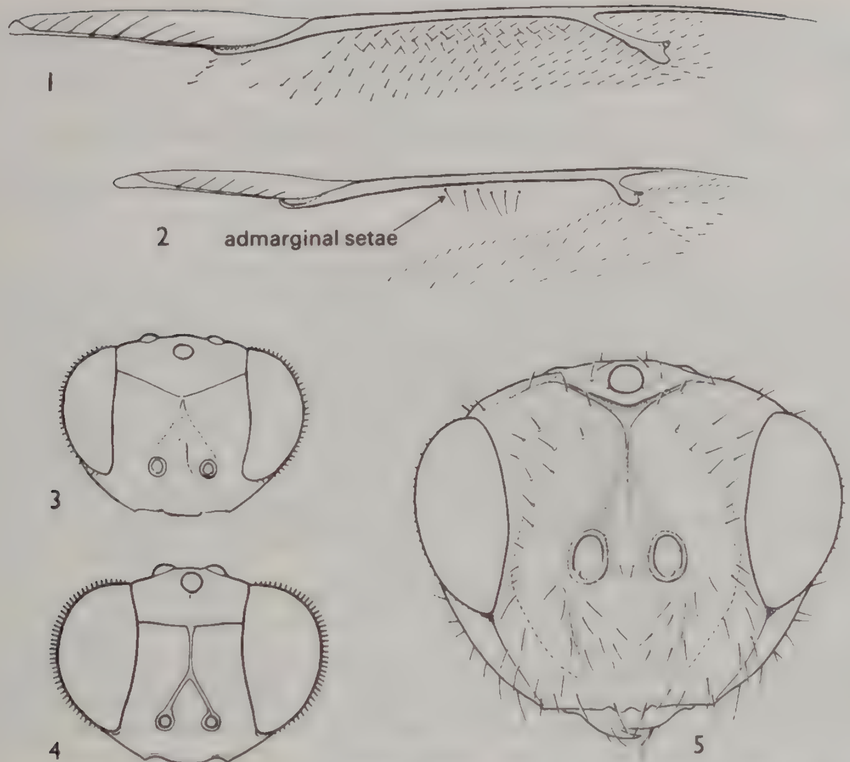
Alcohol-stored specimens tend to swell and distort, then to collapse when removed from the medium. One often has to resort to this method, especially when collecting abroad. The use of a critical point drier as described by Gordh & Hall (1979) overcomes the difficulties and will be a valuable tool when more widely available.

I prefer to mount specimens on their side upon a card of suitable size, as also practised by Bouček for many years. Mounting upon a card-point or tag is useful if one requires to see the maximum possible area of the body, but this renders specimens very liable to damage. Slide-mounting as a general practice is inadvisable, though it may be useful for examining the fine detail of some structures.

In the present work, names of hosts are generally taken from Kloet & Hincks (1964–1978) with those of non-British species drawn from recent continental lists. Names of host-plants follow *Flora Europaea* (1964–1980).

Key to subfamilies of Eulophidae

1 Wings much shortened, often with abnormal venation; or rudimentary 2
– Wings fully developed, with normal venation 3
2 Males: antennal funicle with branches. Females: antennal funicle 4-segmented, clava 2-segmented. Mesoscutum (except in *Xanthellum*) with notauli incomplete and present only anteriorly .... **EULOPHINAE**
– Males: antennal funicle without branches. Females: antennal funicle 3-segmented, clava 3-segmented. Mesoscutum with notauli complete, reaching hind margin **TETRASTICHINAE**



Figs 1–5 1, *Pnigalio pectinicornis* (L.), forewing, anterior. 2, *Euderus* sp., forewing, anterior. 3, *Chrysocharis moravica* (Maláč), ♀, head, frontal. 4, *Achrysocharoides atys* (Walker) ♀, head, frontal. 5, *Aprostocetus lycidas* (Walker) ♀, head, frontal.

3 Scutellum normally with 1 pair of setae, placed near or slightly behind middle of sclerite; if 2 pairs (*Chrysonotomyia albiceps*, some *Chrysocharis moravica*) or with several setae (*Pediobius setigerus*, *P. multisetis*) or without setae (*Myrmokata*) then frons (Figs 3, 4) with an impressed line extending from antennal scrobes nearly or quite to eyes, this line placed about midway between toruli and median ocellus, or at all events not very close to the latter; this line sometimes V-shaped but may be nearly straight. Forewing: submarginal vein with 2 dorsal setae except in the African genus *Myrmokata* which has only 1 seta. Both maxillary and labial palpi usually 1-segmented. Notauli nearly always shallow posteriorly, or incomplete, rarely complete and deep throughout. Mandibles bidentate, bidentate with inner tooth serrulate, tridentate, or edentate. Antennae with 6–10 segments (one to three of these anelliform) **ENTEDONTINAE**

– Scutellum usually with 2 pairs of setae, occasionally with more than 2 pairs, or with several setae irregularly distributed (these setae are weak and difficult to see in some Euderinae). When the scutellum has 2 pairs of setae, or setae irregularly distributed, then the structure of the frons is different from that of Entedontinae (either without an impressed transverse line, or (Fig. 5) with a similar line very close to the median ocellus, or with an incomplete suture which does not reach the eyes). Forewing: submarginal vein with 1 to several dorsal setae. Maxillary and labial palpi 1- or 2-segmented. Notauli often complete and deep throughout. Mandibles tridentate, or with an acute outer tooth and a serrulate inner lobe, or edentate 4

4 Forewing (Fig. 1): submarginal vein continuous with parastigma and running in an unbroken curve right to costal edge of wing; postmarginal vein, at least in European genera, as long as or longer than stigmal vein; speculum either not extending below marginal vein, or extending at most as a narrow strip; admarginal setae, when distinctly developed, not isolated upon the bare strip. Gaster: eighth tergite fused with seventh. Notauli either present only anteriorly; or if complete, then (in European genera) their hind ends normally intercept the axillae at least very slightly laterad of the scutellar base (exceptions are some *Cirrospilus*, and some

Ratzeburgiola in which the notauli converge very strongly caudad and nearly meet). Hind margin of mesoscutal scapulae weakly to moderately deeply excised. Frons usually without transverse sutures, rarely with a short one just in front of the median ocellus. Males: antennal funicle sometimes with branches, but without whorls of very long setae. Mandibles very often with a serrulate inner lobe, sometimes tridentate or edentate. Maxillary palpi with 2 segments, labial with 2 segments or 1 segment. Antennae normally 9-segmented (one or two segments are anelliform, but not always easy to distinguish individually, so that the antennae may be 8- or 10-segmented in a few cases) .... **EULOPHINAE**

– Forewing (Figs 2, 11): submarginal vein in most species becoming weak or obsolescent just beyond base of parastigma, which is dislocated with respect to the submarginal (in a few Tetrastichinae the parastigma is not or indistinctly dislocated, but these have the postmarginal vein rudimentary; also a few Euderinae, which have the speculum extended as a broad bare strip as far as the stigmal vein (Fig. 2) with an isolated row of downward-pointing admarginal setae placed upon it, whilst the eighth gastral tergite is separated from the seventh by a suture). Notauli complete, nearly always deep; their hind ends nearly always intercept the scutellum at or slightly mesad of the ends of its base. Hind margin of mesoscutal scapulae usually deeply excised, sometimes weakly so. Frons (Figs 3, 4, 150) nearly always with a partial or complete V-shaped or straight transverse suture just in front of the median ocellus. Males: antennal funicle without branches, but often (many Tetrastichinae, some Euderinae) with compact whorls of very long setae. Mandibles nearly always tridentate, very rarely with serrulate inner lobe, or bidentate. Maxillary and labial palpi with 2 segments or 1 segment. Antennae with 9–12 segments (one to four anelliform).. 5

5 Females: eighth tergite of gaster separated from seventh by a transverse suture at level of cerci; antennal funicle with 4 segments; postmarginal vein usually as long as or longer than stigmal vein, rarely very slightly shorter. Males and females: forewing in European genera with speculum contained below marginal vein as a broad bare strip nearly or quite to the stigmal vein, the only setae upon this strip being an isolated row of downward-pointing admarginal setae (Fig. 2); wing in most genera with some lines of setae, two or three of which radiate from the stigmal vein, and often with dark markings forming a pattern, if without dark markings then frons with a complete transverse suture from eye to eye and virtually touching median ocellus. Scutellum without submedian lines. First segment of mid and hind tarsi often much longer than second. Both maxillary and labial palpi 2-segmented............... **EUDERINAE**

– Females: eighth tergite of gaster not separated from seventh; antennal funicle (in European genera and most others) nearly always with 3 segments, rarely 4 in which case the postmarginal vein is rudimentary. Males and females: forewing in most cases without, or with at most a narrow bare strip below the marginal vein, rarely a very broad one; admarginal setae weakly developed and usually inconspicuous; postmarginal vein most often rudimentary or much shorter than stigmal vein, about as long as stigmal vein in *Peckelachertus* and *Apotetrastichus*; wing without specialized lines of setae, rarely with dark markings which, when present, do not form a pattern. Frons without a complete transverse suture, but usually with an incomplete suture the ends of which bend towards the lateral ocelli (Figs 5, 7, 15, 19, 20). Scutellum most often with submedian lines. First segment of mid and hind tarsi usually hardly longer than second, occasionally shorter, rarely as much as 1·5 times as long as second. Both maxillary and labial palpi 1-segmented .... **TETRASTICHINAE**

Phylogeny of Eulophidae

Domenchini (1966*b*: 13) suggested that Tetrastichinae are closely related to Entedontinae and show greater development than the Elachertinae, Eulophinae and Euderinae. The relationships of the subfamilies composing Eulophidae as generally accepted are not entirely clear and need more study. My own research indicates that Eulophinae (including Elachertinae) may be the sister-group of the rest of Eulophidae. Entedontinae could be the sister group of Euderinae and Tetrastichinae. These three subfamilies share the apomorphic character-state of a broken or dislocated distal part of the submarginal vein (rather indistinct in some genera of Euderinae). Euderinae and Tetrastichinae appear to be more closely related to each other than to either of the other two subfamilies. Possibly Entedontinae, Euderinae and Tetrastichinae originated from some ancestral stock in the neighbourhood of the genus-group *Aulogymnus* (Eulophinae). These genera bear some resemblance to Tetrastichinae in the structure of the head and thorax, the male genitalia, and some other characters.

Subfamily Tetrastichinae: diagnosis

Tetrastichinae can be regarded as a monophyletic group on the basis of the following synapomorphies.

1. Presence of a sensory plaque on the leading edge of the male antennal scape. Apparently an autapomorphy.
2. Both maxillary and labial palpi reduced to a single segment (occurs also in most if not all Entedontinae).
3. Dislocation or break of the submarginal vien of forewing at level of the parastigma (this occurs in Entedontinae and some Euderinae).

Other evolutionary trends in Tetrastichinae supporting the concept of monophyly are as follows.

4. Strong reduction of postmarginal vein in all but a very few genera. This is found in some Entedontinae but not elsewhere in Eulophidae.
5. Hind margin of scapulae (side lobes of mesoscutum) very deeply excised in most species, rarely shallowly excised. This very deep excision of the scapulae occurs otherwise only in some tropical genera of Euderinae (and in some members of the family Trichogrammatidae).
6. Presence in more than 50 per cent of the species of compact whorls of very long setae on the flagellum of males (present otherwise only in some Euderinae, in which their structure is different).
7. Extreme reduction, in a number of genera, of the dorsal setae of the submarginal vein to a single seta (otherwise known only in the African entedontine genus *Myrmokata*).
8. Frequent presence of a median longitudinal impressed line on the mid lobe of the mesoscutum (rarely at all indicated in other Eulophidae).
9. Reduction of the number of spines (or teeth) on the hind edge of the digitus of the male genitalia to one, in a very large number of species. All other genera of Eulophidae examined have 2 or 3 spines or teeth on the digitus.
10. Gaster: one seta of each cercus very often considerably longer than the others (this condition recurs in some Euderinae and some Eulophinae, but not so far as I am aware in Entedontinae). It occurs also in some outgroups such as Proctotrupoidea, Ceraphronoidea, and a very few Chalcidoidea, family Pteromalidae.

Tetrastichinae appear to form a sister-group to Euderinae, which subfamily is characterized by the folowing synapomorphies.

1. Eighth gastral tergite of female separated from the seventh by a transverse suture at level of cerci (apparently an autapomorphy).
2. First segment (basitarsus) of mid and hind tarsi usually very distinctly longer than second segment; in such cases first segment of mid tarsi 1·5–2·0 times as long as second, and as long as or longer than combined length of second and third.
3. Lower surface of costal cell of forewing with the row of setae reduced to a few situated in the distal half, or even wholly absent.
4. Forewing, below the marginal vein, with a broad bare strip, upon which the only setae present are the differentiated admarginal setae (Fig. 2). The highly aberrant South American genus *Aoridus*, however, has no trace of a bare strip.

Nothing is known of the fossil history of Tetrastichinae. It appears to be a relatively young group, still in a state of rapid evolution.

Ground plan of Tetrastichinae

Piliferous punctures of head and thorax minute, not umbilicate. Anterior margin of clypeus bidentate. Malar sulcus present, straight, not foveate below eye. Frons with median longitudinal line or carina. An impressed line between each lateral ocellus and adjacent eye. Mandibles tridentate with inner tooth obtuse. Both maxillary and labial palpi single-segmented. Antennae: toruli situated at or slightly above level of ventral edge of eyes; antenna 12-segmented, with 3 anelli, 4 funicular segments, and 3 claval segments; funicular segments of female subequal in length and probably somewhat longer than broad; scape of male with sensory plaque probably rather long and situated in about middle of front edge, funicular segments subequal in length, without compact subbasal whorls of long dark setae; sensilla subdecumbent, possibly in more than one row on each flagellar segment, but irregular, only moderately long.

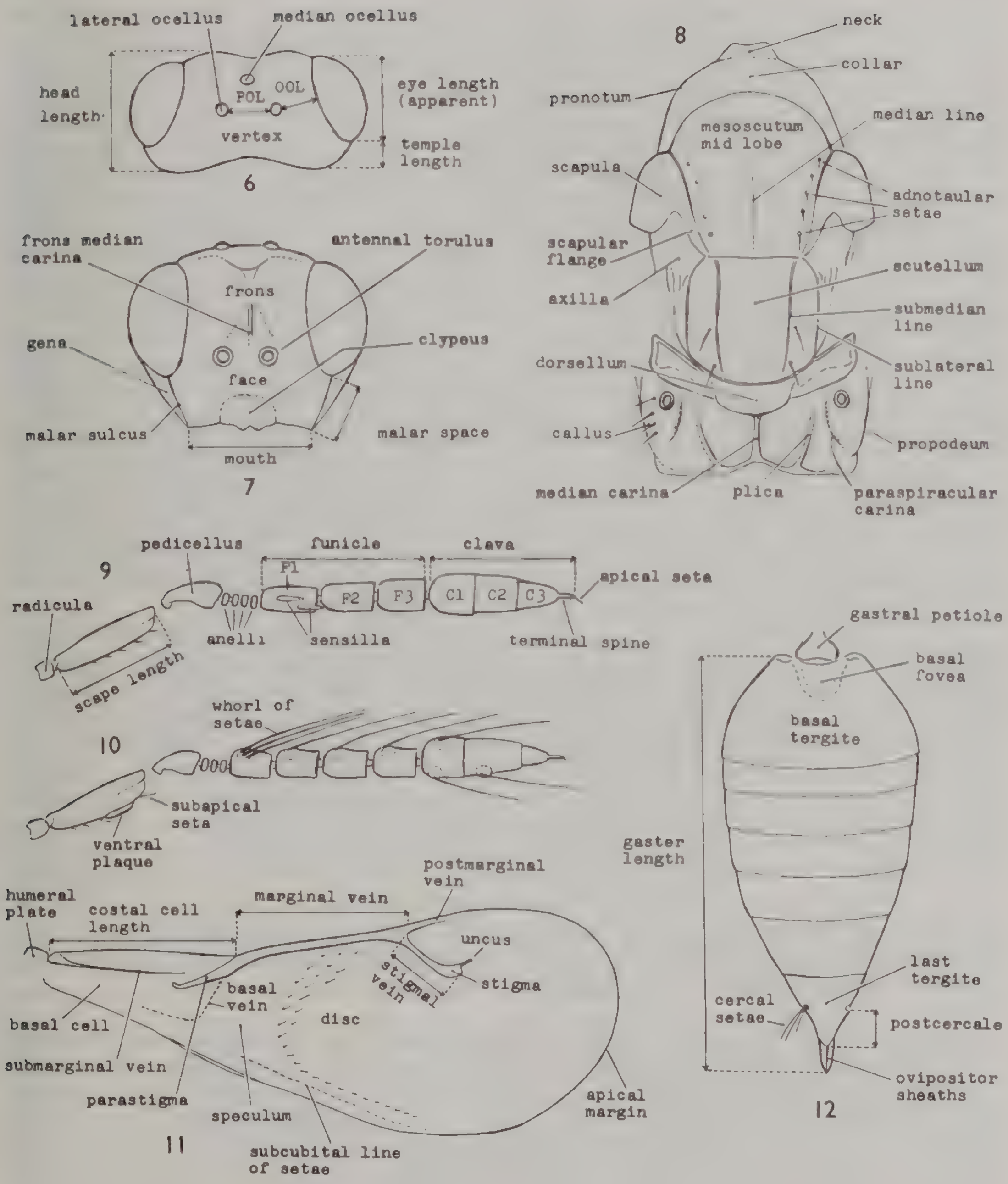
Thorax not flattened dorsoventrally. Pronotum of medium length, very finely reticulate. Reticulation of thorax not strong. Mid lobe of mesoscutum without a median line, with many setae scattered irregularly over its surface; notauli complete, deep, convergent. Scutellum with both submedian and sublateral longitudinal lines; with 4 setae, the anterior pair situated in front of the middle; base of scutellum as broad or broader than distance between hind ends of notauli. Dorsellum evenly convex. Propodeum medially about as long as or slightly longer than dorsellum, relatively weakly sculptured; median carina present, plicae and paraspiracular carinae absent; spiracles close to hind margin of metanotum, short-oval, the whole of their rim exposed; callus not longitudinally carinate or crested, with a row of several setae. Lateral panels of prepectus broadly triangular and relatively large, weakly reticulate. Mesepisternum without precoxal suture. Mesosternum convex just in front of trochantinal lobes. Hind coxae oblique, weakly sculptured, without externodorsal carina or rugosity. First segment (basitarsus) of fore leg as long as second. Basitarsus of mid and hind legs at least as long as second segment. Forewing moderately long and not broad (perhaps about 2·3 times as long as broad); lower surface of costal cell with a complete row of setae; submarginal vein with several dorsal setae; marginal vein not much longer than costal cell; parastigma dislocated with respect to submarginal vein; setae on front edge of marginal vein relatively short; postmarginal vein about as long as stigmal; speculum absent or nearly so, closed below; subcubital line of setae, on upper surface of wing, extending basad to level of basal vein; fringe of apical margin of wing short. Hindwing obtuse apically; distal portion (beyond marginal vein) less than twice length of marginal vein; fringe only moderately long.

Gastral petiole subconical, small, broader than long in female, smooth. Gaster not strongly sclerotized (collapsing more or less dorsally on drying), probably ovate and acute; cercal setae not long, subequal in length; spiracles of segment 6 invisible, probably ventral or lateral; ovipositor sheaths reaching tip of last tergite but not projecting much beyond it. Anterior margin of female hypopygium trilobed, its hind margin incised medially. Male genitalia not greatly elongated; digitus about twice as long as broad, its hind edge with 2 or 3 short oblique teeth. Body black, probably non-metallic, not pale-marked. Species ectoparasitic in biology.

Amongst the genera of Tetrastichinae treated here, *Eutetrastichus* Kostjukov comes nearest to the ground plan of the subfamily. It diverges from it chiefly in its strongly reduced postmarginal vein, reduced number of antennal anelli, presence of median line of mesoscutum, deeply excised mesoscutal scapulae, tendency to have the first segment of mid and hind tarsi slightly shorter than the second, and tendency towards reduction in the number of dorsal setae on the submarginal vein.

Adult morphology and terminology (Figs 6–12)

Head: this shows many useful characters but tends to collapse and then some structures cannot be measured. Where the proportions of the head, ratio of POL to OOL, OOL to OD (OD is the major diameter of a lateral ocellus) and other features could be accurately measured in undistorted specimens, this has been done. The term 'mouth' is used instead of the terms oral fossa and intermalar space of my earlier papers. The mandibles occasionally offer tangible characters. Most useful throughout Tetrastichinae are the antennae, which have been figured for nearly every species. The position of their insertion on the head; length, shape and vestiture of the scape (especially in males) and characters of the flagellum, are particularly important. When measurements of the scape are given, the radicula is not included. It should be noted that the scape is more or less flattened from side to side, whilst the pedicellus is attached excentrically to its apex, hence one cannot obtain an exact profile view of both at the same time. For this reason, all the figures show the scape detached from the rest of the antenna, the correct profile view of both being shown. Besides the proportions of the segments of the antenna, some other features call for attention. The sensilla linearia (rhinaria of Richards, 1956, and others) vary much between different species. Perhaps the commonest type is a sensillum having an elongate base or plinth upon which the sensillum is recumbent with only its tip projecting beyond this base (in some published figures only the base is shown, the projecting part or blade having been overlooked). In other cases the base is shorter and the blade longer, the latter being sometimes suberect. The elongate bases tend to be associated with decumbent or subdecumbent sensilla, whilst the short bases tend to bear more seta-like sensilla. All intermediate grades occur. The greatest number of antennal segments found in Tetrastichinae is 12, e.g., in *Quadrastichodella*, in which the female has scape, pedicellus, 4 distinct anelli, 3 funicular segments, and 3 claval segments. Thus the tetrastichine antenna cannot have been derived directly from that of any


lateral ocellus
median ocellus
head length
POL
OOL
vertex
eye length (apparent)
temple length
6
frons median carina
antennal torulus
frons
gena
clypeus
face
malar sulcus
malar space
mouth
7
8
neck
collar
pronotum
mesoscutum mid lobe
median line
scapula
adnotaular setae
scapular flange
scutellum
axilla
submedian line
dorsellum
sublateral line
callus
propodeum
median carina
plica
paraspiracular carina
9
pedicellus
funicle
clava
F1
F2
F3
C1
C2
C3
apical seta
radicula
anelli
sensilla
terminal spine
scape length
gastral petiole
basal fovea
whorl of setae
10
basal tergite
subapical seta
ventral plaque
gaster length
postmarginal vein
humeral plate
costal cell length
marginal vein
uncus
stigmal vein
stigma
basal vein
disc
basal cell
submarginal vein
parastigma
speculum
apical margin
subcubital line of setae
11
last tergite
cercal setae
postcercale
ovipositor sheaths
12

Figs 6–12 Terminology of Tetrastichinae. 6, head, dorsal. 7, head, frontal. 8, thorax, dorsal. 9, antenna, ♀. 10, antenna, ♂. 11, forewing. 12, gaster, ♀.

other existing group of Eulophidae, in which the antennae have at most 10 segments. Specialization has occurred in the reduction in the number of segments, nearly always the proximal segments of the flagellum, which in apomorphic forms become reduced in length so as ultimately to form discoid anelli, some of which then disappear completely in extreme cases. Sexual dimorphism in the antennae is very slight in a few genera, being restricted (in males) to a modification of the scape and a less extreme reduction of the proximal flagellar segments as compared with their females. Generally the male scape is relatively broader and nearly always bears a plaque or carina (which may be a chemo-sensory organ) upon its anterior (ventral) edge; the number of anelli is nearly always one fewer, and the number of funicular segments one greater, than in the female, also the funicular segments and some segments of the clava often bear whorls of long to very long dark setae. The latter do not occur in any other subfamily of Eulophinae except some Euderinae, in which their form is slightly different. The terminal spine of the antennal clava, and its subapical seta, are important for distinguishing some species. Interesting structures are the minute mushroom-shaped sensilla which are arranged in a ring near the apex of the funicular segments (except notably in male *Melittobia*). With the use of scanning electron microscope photography the usefulness of setae and the various types of sensilla will become increasingly important. It was thought worthwhile to illustrate some modifications of the anelli in a number of groups (Figs 687–744). From the pleisomorphic state (Figs 727, 728) where the fourth flagellar segment has not yet been reduced to anelliform condition, there follows a state where this segment is so reduced, 4 anelli being present (Fig. 696). Further reduction occurs in more derived groups until finally a single anellus is left (Fig. 743). This appears to be the first anellus (i.e. that immediately following the pedicellus) which remains constant throughout the course of reduction in all groups. When the number is reduced from 4 to 3, the anellus which most often disappears is the second (see Figs 708, 715, 730). This is eventually followed in some groups by disappearance of the third and fourth, probably in that order. Reduction is often asymmetric, with anelli which are disappearing becoming thinner on the dorsal than on the ventral side as in Figs 706–708, 715, 716, 723.

Thorax: the proportions of the component sclerites are important. The mesoscutum in particular shows several useful features: the mid lobe especially, as regards sculpture, presence or absence of a median line, and the number, arrangement, length and orientation of its setae (the latter, when reduced to a single row on each side, are termed adnotaular setae); the side-lobes, termed scapulae in the present work, have some characters. The shape, degree of convexity, sculpture, presence of impressed lines and their position, and location of paired setae, are important features of the scutellum. Characters of the propodeum are of primary importance: its shape, degree of emargination above the gastral petiole, development of various carinae, size, shape and position of the spiracles, number of setae on the callus, sculpture. I have followed Richards (1956; fig. 38) in using the term precoxal suture for a weak impressed line which occurs below the femoral hollow of the mesopleuron in some species (Fig. 52, ps). On the other hand, the term prepectus is here employed for the lateral panel of the prepectus termed 'postspiracular sclerite' by Richards. Other parts, such as the prosternum and the mesosternum, have been examined and show some characters, though not very tangible ones.

Wings (Fig. 11) provide some of the most useful characters, both for general classification and species determination. The proportions of the submarginal (*SM*), marginal (*M*), stigmal (*ST*) and postmarginal (*PM*) veins are important. The number of dorsal setae on the submarginal vein is an extremely useful key-character, though it may be doubted whether it is of fundamental significance. The frequency of individuals with abnormal chaetotaxy of the submarginal vein in a few species suggests that changes in the number of setae may involve only slight genetic complexity. It should be noted that the number of dorsal setae on the submarginal vein does not include those present on the parastigma. Other wing-characters, of varying degrees of usefulness, will be obvious from the species descriptions. Wing length, and length of costal cell, are measured from the distal edge of the humeral plate, as shown in Fig. 11.

Legs: the length of the apical spur of the mid tibia relative to the basitarsus, and the relative lengths of the basitarsus and fourth tarsal segment of the mid and hind legs, are important for distinguishing some close species. These characters are not easy to measure and may necessitate removal of one or two legs.

Gaster (Fig. 12): its shape and proportions provide useful characters, also the proportions of some of its segments such as the last (7th + 8th) tergite. These proportions appear to vary considerably in some species, hence the range of variation is always given. Measurements have been consistently made upon dried specimens. The relative lengths of the cercal setae are important and are in some cases a species-group or even a generic character. A specialization which occurs frequently in Tetrastichinae is the condition in which one seta of each cercus is much longer than the others and often sinuate or kinked in the middle. This condition is infrequent in other families of Chalcidoidea except notably Encyrtidae; it occurs also in some Proctotrupoidea and Ceraphronoidea. The length of the ovipositor sheaths is a useful character within some species-groups. It is not, however, of generic value, as frequently claimed in the past, because species having the ovipositor sheaths not at all exserted and others with them far exserted can occur within the same species-group. An extreme example occurs in *Aprostocetus*, subgenus *Ootetrastichus*, where *crino* has hardly exserted sheaths, whilst *percaudatus* has them as long as or longer than the body. The female hypopygium (5th gastral sternite) has sometimes been figured (e.g., by Kostjukov, 1978*a*) but without attention being drawn to its features. The latter, however, apper to be sometimes of generic value (see my key to genera). The form of the hypopygium having the anterior margin trilobed seems to be the plesiomorphic state; it occurs also in some Euderinae, a number of Eulophinae, some Entedontinae, and some outgroups. Forms with truncate anterior margin, or with posterior margin bidentate, are considered to represent apomorphic states. The male genitalia of individual species have been figured by several authors but no comparative study of their form has hitherto been attempted. I have examined these structures in all the species where males were available. They most resemble those of some Eulophinae tribe Elachertini, especially *Aulogymnus* which has 3 teeth on the digitus. Their chief features appear to be: parameres distinctly produced, with a terminal seta and usually another just before the apex; median portion of basiparameres at least slightly produced in the median line to form a projection lying between the bases of the digiti; each digitus most frequently with a single posterior spine, sometimes with two teeth, rarely with three teeth. In general, some characters of species-group value exist, occasionally some of generic value. As males of some species are rare, it was not possible as a rule to assess intraspecific variation in the genitalia. There do not seem to be very tangible differences, except in proportions of various parts, between allied species. At present better and more easily seen characters for distinguishing males can be found in their antennae and other parts of the body.

Body sculpture comprises three main types. First, fine reticulation or alutaceous sculpture which is independent of the presence or location of setae (Figs 275–280). Its character (degree of coarseness or fineness of mesh; shape of the component areoles; walls of the mesh, whether raised above the general surface, superficial or flush with the surface, or engraved) provides very useful features. Ideally they are best illustrated by means of scanning electron microscope figures. Reticulation tends to be relatively somewhat wider-meshed in smaller individuals of a given species. Piliferous punctures form a system independent of reticulation. Enlarged piliferous punctures are rarely present in European species but in some extralimital (particularly Neotropical) species they occur on the head and thorax. Carinae of various types may occur on different parts of the body and are usually important in classification. Chaetotaxy provides very useful characters. The thorax, particularly the mesoscutum, scutellum, and propodeal callus; and the wings, especially the submarginal vein, are important in this respect. Reduction in the number of setae on these parts has evidently occurred in many different evolutionary lines, and has often been accompanied by specialization in the distribution and relative lengths of the setae. When reduced to a low number on a particular structure they are relatively constant and are then useful as key-characters. Probably such reductions can occur fairly rapidly in the course of evolution, hence they may not always be of great significance from the phylogenetic point of view.

Variation. Many species vary considerably in size. Where the range of body length is given, the upper limit is usually more significant. In general, larger individuals of a given species tend to have relatively longer funicular segments in the antenna, a greater number of setae on the mesoscutum and submarginal vein, shorter wing-fringes, and a shorter and broader gaster; smaller individuals *vice versa*. The range of variation for such features is given. Colour is extremely variable in some species, and relatively constant in others. Thus *Sigmophora brevicornis* (Panzer) varies from wholly black in extreme northern forms to wholly yellow in south European and Asiatic forms. This type of variation has only been studied over a limited range of distribution in some species, which may well prove to have greater variation than at present suspected. The presence or absence of a metallic tinge on the body, and its intensity when present, are subject to variation. Some species (e.g., *Aprostocetus epicharmus* (Walker)) show distinct metallic tints on black areas in darker forms, but in mainly yellow forms metallic tints are absent or not distinctly perceptible against the pale background. For these reasons colour has been used with caution in the keys.

Phylogeny of Tetrastichinae

Domenichini (1966*a*: 70–71) regarded his species-group of *strobilanae* (=*caudatus*- plus *lycidas*-groups of the present work) as the least specialized. From this he thought it likely that the groups of *neglectus*, *pausiris*, *fulvipes*, *viridimaculatus*, and *brevicornis* might have been derived. He regarded the groups of *evonymellae* and *daira* as being near that of *pausiris* and preceding the group of *miser* (=*Tetrastichus* s.str.). He pointed out that the groups of *crino* and *viridimaculatus* showed similarities which, however, might indicate convergence rather than common origin. The group of *ecus*, from which was derived the group of *microscopicus* (=*Cecidotetrastichus* in part of present work) was of uncertain position. The *gallerucae*-group had connections, through the group of *coccinellae*, with that of *miser*; and more closely with the group of *oreophilus*, from which the group of *pygmaeus* was separated. One of the most specialized groups, that of *pubescens*, could be derived from the *miser*-group.

In general, Domenichini's speculations are very reasonable. At present I consider it premature to advance a phylogenetic scheme for Tetrastichine genera, whilst the tropical and southern hemisphere genera are relatively little known. Some possibilities suggest themselves, however. *Quadrastichodella*, *Tetrastichomyia* and *Thripastichus* do not seem closely related to the European genera, and probably evolved outside the Palaearctic region. Of the other genera, *Eutetrastichus* seems to be nearest the ground plan of the subfamily, as noted above. Possibly the ancestral stock of *Eutetrastichus* divided to form two divergent lines, one leading to *Tetrastichus* s.str. (*miser*-group) and a number of related genera, the other to the *Aprostocetus*-complex of genera. The first line includes *Chaenotetrastichus*, *Tamarixia*, *Sphenolepis*, *Mischotetrastichus*, *Holcotetrastichus*, *Tetrastichus*, *Petalidion*, *Oomyzus*, and possibly *Cecidotetrastichus*. Several of these genera show marked apomorphies, including, for example, the form of the mandibles in *Chaenotetrastichus*, the unique form of the genitalia in *Tamarixia*, and the strongly developed carinae of the propodeum in *Tetrastichus*. The *Aprostocetus*-complex of genera shows several diverging lines. One which includes *Kocourekia*, *Melittobia*, *Crataepus*, *Pronotalia*, and *Tachinobia*, is characterized by the synapomorphism of the obsolescent malar sulcus. *Aceratoneuromyia*, which seems to have some affinity with the genera just mentioned, is autapomorphic in respect of its gastral spiracles and the long seta of the antennal clava. The remaining genera of the *Aprostocetus*-complex appear to form a more closely-knit assemblage. It includes *Peckelachertus*, *Apotetrastichus*, *Minotetrastichus*, *Xenaprostocetus*, *Aprostocetus*, *Neotrichoporoides*, *Anaprostocetus*, *Kolopterna*, *Sigmophora*, and *Nesolynx*.

Tetrastichinae are a highly successful group, still apparently in a state of rapid evolution. Consequently their taxonomic treatment poses some problems both at the species and genus levels. Although the present work is not a phylogenetic study of the group (which would involve a survey on a much wider basis than included in my remit) an effort has been made to assess the situation as far as possible in terms of phylogenetic systematics. One difficulty has been to decide in certain cases which character-states are plesiomorphic and which apomorphic. A list of the characters used follows here. I believe that for the majority of characters the plesiomorphic and apomorphic states have been correctly assessed, though further research may modify some of the conclusions. A very few characters which appear only in plesiomorphic state in the European fauna are listed because they become significant in apomorphic state in species or genera from other areas.

List of characters and character-states

Plesiomorphic states scored 0, apomorphic states 1, 2, 3. (Linear series as 1, 1a, 1b, etc.).

1. Anterior margin of clypeus bidentate (0) with minute teeth (1) truncate (1a).
2. Eyes normal (0) eyes of ♂ rudimentary or absent (1).
3. Ocelli normal (0) ocelli of ♂ minute (1).
4. Mandible tridentate with inner tooth obtuse (0) with acute outer tooth and serrulate inner lobe (1) with two inner teeth very small and approximated, outer tooth long and falcate, widely separated from the other two (2).
5. Malar sulcus present (0) absent or virtually so (1).
6. Frons with median longitudinal line (0) with median area (1).
7. Head without large piliferous punctures (0) with large piliferous punctures (1).
8. Face without radiating striae (0) with radiating striae (1).
9. Foramen magnum about in middle of height of head (0) slightly below the middle (1) slightly to much above the middle (2).
10. Head not higher than broad (0) slightly to distinctly higher than broad (1).
11. Vertex without transverse carinae (0) with a transverse carina at junction of vertex with occiput, this carina nearly or quite reaching the eyes, often another across the ocellar triangle (1) with a weak transverse ridge in middle, at junction of vertex with occiput (2).
12. Vertex without subtriangular foveae outside the lateral ocelli (0) with such foveae (1).
13. Antennal scape with weak or obsolescent sculpture (0) with raised or coarser reticulation, or cross-ridges, in the distal part (1).
14. Antennal scape of ♂ normal (0) much swollen distally and usually excavated there (1).
15. Antennal pedicellus with weak or obsolescent sculpture (0) with raised or coarser reticulation, or cross-ridges, in its distal part (1).
16. Antenna of ♀ with 4 funicular segments and 3-segmented clava (0) with 3 funicular segments and a variable number (most often 3 or 2) of claval segments (1) with 4 funicular segments and 2-segmented clava (2).
17. Antenna of ♀ with 3 anelli combined with a 4-segmented funicle (0) with 4 anelli (1) with 3 anelli combined with 3-segmented funicle (2) with 2 anelli (2a) with 1 anellus (2b).
18. Antenna of ♂ with funicle 4-segmented (0) 5-segmented (1) 3-segmented (2).
19. Antenna of ♂ with 3 anelli (1) with 2 anelli (1a) with 1 anellus (1b).
20. Antenna of ♂ with funicle and clava without compact subbasal whorls of long dark setae (0) with such whorls (1).
21. Antenna of ♀ with claval spine having its apical seta shorter than or at most as long as the spine (0) with apical seta about twice as long as the spine (1).
22. Pronotum of medium length, say 0·25–0·30 length of mesoscutum (0) long, at least 0·5 length of mesoscutum (1) short to very short (2).
23. Pronotum campanuliform (0) triangular (1) lunate (2) subrectangular (3).
24. Pronotal spiracles not projecting (0) projecting slightly, as seen in dorsal view (1).
25. Pronotal collar not delimited (0) delimited anteriorly by a transverse carina (1).
26. Mesoscutum: mid lobe without a median line (0) with at least some trace of a median longitudinal line (1).
27. Mesoscutum without large piliferous punctures (0) with such punctures (1).
28. Mesoscutum: mid lobe with setae scattered irregularly over the surface (0) setae reduced to a few rows on each side (1a) reduced to one row on each side (1b) reduced to a single seta on each side (1c) with two types of seta (2).
29. Mesoscutum: scapulae (side lobes) broadly triangular (0) narrowly triangular (1a) sublinear (1b).
30. Setae of pronotum, mesoscutum and scutellum not thickened (0) some or all setae of these parts thickened, distinctly stouter than setae of propodeal callus (1).

31. Scutellum with submedian lines (0) these lines obsolescent or absent (1).
32. Scutellum: submedian lines narrow and relatively shallow, not or only weakly transcostate (0) broad, deep, and transversely costate (1).
33. Scutellum with 2 pairs of setae, or occasionally 3 setae on one or both sides in aberrations (0) with 4 or more pairs of setae (1) with supplementary small setae in addition to the usual ones (2) with setae irregularly distributed (3).
34. Scutellum without large piliferous punctures (0) with such punctures (1).
35. Dorsellum undivided (0) divided medially by a longitudinal groove or ridge (1).
36. Propodeum: spiracles with whole rim exposed (0) with outer part of rim more or less covered by a raised flap of the callus (1).
37. Propodeum: spiracles either close to hind margin of metanotum or separated from it by at most about their own diameter (0) separated from metanotum by 1·5–2·0 times their diameter (1).
38. Propodeum without plicae (0) with plicae indicated in hinder part (1) with complete plicae (1a).
39. Propodeum without paraspiracular carinae (0) with weak paraspiracular carinae (1) with sharp carinae (1a).
40. Propodeum: callus without longitudinal crest or carinae (0) with longitudinal ridge or carina (1).
41. Propodeal callus with 3 or more setae (0) with 2 setae (1).
42. Propodeum: median area weakly sculptured to smooth (0) strongly reticulate (1) with irregular wrinkles, more or less areolate (2).
43. Mesosternum, just in front of trochantinal lobes, convex (0) flat or nearly so (1).
44. Mesosternum: mesolcus (median longitudinal groove) distinct (0) obsolescent (1).
45. Mesepisternum without precoxal suture (0) with this suture more or less indicated (1).
46. Hind coxae without dorsolateral carina (0) with such carina (1).
47. Trochanter and femur of ♂ mid leg without long outstanding setae (0) with a row of long outstanding setae beneath (1).
48. Fore tibia with one simple apical spur (0) with strong, deeply bifid spur (1).
49. Hind tibia: apical spur much shorter than basitarsus (0) apical spur of ♂ virtually or quite as long as basitarsus (1) apical spur ♂♀ longer than basitarsus (2).
50. First segment (basitarsus) of mid and hind tarsi about equal in length to second segment (0) slightly shorter than second (1) much shorter than second (1a) much longer than second (2) first segment of mid tarsi only, about 1·5 times as long as second (3).
51. Wings normally developed (0) ♂ brachypterous (1) ♀ brachypterous (2).
52. Forewing: submarginal vein with 2 or more dorsal setae (0) with 1 dorsal seta (1).
53. Forewing: submarginal vein without decolourized area (0) with decolorized area where marginal vein joins parastigma (1).
54. Forewing: stigmal vein not very short, marginal vein at most hardly 6 times length of stigmal (0) stigmal vein very short, marginal vein 6·0–9·5 times length of stigmal (1).
55. Forewing: marginal vein about as long as, or longer than, costal cell (0) distinctly shorter than costal cell (1).
56. Forewing: postmarginal vein about as long as stigmal vein (0) at most 0·5 length of stigmal vein, but most often rudimentary or absent (1).
57. Forewing: apical margin ciliate (0) bare (1).
58. Gastral petiole small, subconical, smooth or virtually so (0) small but reticulate or otherwise sculptured (1) at least slightly longer than broad, not carinate (2) longer than broad, with 3 longitudinal carinae (3).
59. Gaster relatively weakly sclerotized, collapsing dorsally after death (0) convex and relatively rigid dorsally (1).
60. Gaster: cercal setae relatively short, subequal in length (0) one seta of each cercus distinctly longer than the others (1).
61. Gaster: ♀ hypopygium reaches at most slightly beyond the middle (0) reaches nearly to apex of gaster (1).
62. Gaster: ♀ hypopygium with anterior margin trilobed (0) truncate or nearly so (1).
63. Gaster: ♀ hypopygium with posterior (caudal) margin not produced in middle (0) produced in middle (1).
64. Gaster: spiracles of tergite 6 not visible (0) visible, dorsal in position (1).
65. Gaster of ♂ not thickly clothed with decumbent setae (0) thickly clothed, except at the base, with decumbent, backward-directed setae (1).
66. Gaster of ♂: genitalia at most about 4 times as long as broad, except in one species where it is 7·5 times (0) 8–14 times as long as broad (1).

67. Gaster of ♂: digitus expanding slightly caudad (0) parallel-sided or tapering caudad (1).
68. Gaster of ♂: digitus short, at most 3·7 times as long as broad (0) long, 4–6 times as long as broad (1).
69. Gaster of ♂: digitus with 2 or 3 short teeth or spines on hind edge, directed obliquely (0) with 2 spines directed caudad (1) with 1 spine directed obliquely (2) with 1 spine the outer edge of which continues the line of the outer edge of the digitus itself (3).
70. Hosts: groups other than Psylloidea (0) Hemiptera: Psylloidea (1).

Depositories

BMNH	British Museum (Natural History), London.
GD	G. Domenichini collection, Piacenza.
HUE	Hull University Expedition, Hull.
ICIPE	International Centre of Insect Physiology and Ecology, Nairobi.
IEA	Istituto di Entomologia agraria, Portici.
IEE	Instituto Español de Entomologia, Madrid.
ITZ	Instituut voor Taxonomische Zoölogie, Zoölogisch Museum, Amsterdam.
JCR	J. C. Roskam collection, Leiden.
KJH	K.-J. Hedqvist collection, Washington, D.C.
MCSN	Museo Civico di Storia Naturale 'Giacomo Doria', Genoa.
MHN	Muséum d'Histoire Naturelle, Geneva.
MIZSU	Museo ed Istituto di Zoologia Sistematica dell'Università, Turin.
MJG	M. J. Gijswijt collection, 's Graveland, Netherlands.
MM	The Manchester Museum, Manchester.
MNHN	Muséum National d'Histoire Naturelle, Paris.
MNHU	Museum für Naturkunde der Humboldt-Universität, Berlin.
MRAC	Musée Royal de l'Afrique Centrale, Tervuren.
MVG	M. W. R. de V. Graham collection, BMNH.
NM	Naturhistorisches Museum, Vienna.
NMG	Naturhistoriska Museet, Göteborg.
NMI	National Museum of Ireland, Dublin.
NMP	Národní Muzeum v Praze, Prague.
NR	Naturhistoriska Riksmuseet, Stockholm.
RNH	Rijksmuseum van Natuurlijke Historie, Leiden.
RRA	R. R. Askew collection, Manchester.
RSM	Royal Scottish Museum, Edinburgh.
TM	Természettudományi Múzeum, Budapest.
UM	University Museum, Oxford.
USNM	United States National Museum, Washington, D.C.
ZI	Zoologiska Institutionen, Lund.
ZIL	Zoological Institute, Academy of Sciences, Leningrad.
ZM	Zoologisk Museum, Copenhagen.
ZMA	Zoological Museum, Aligarh Muslim University.
ZMU	Zoological Museum of the University, Helsinki.
ZSBS	Zoologische Sammlung des Bayerischen Staates, Munich.

Descriptions of some new genera

It has been found necessary to propose several new genera in Tetrastichinae. This monograph will be presented in two parts. The first part contains descriptions of all the new genera, so that they can be included in the key to genera. Some, the full treatment of which will be deferred until the second part of the work, are described immediately below. Descriptions of the remainder will be found in their appropriate places in the text.

HOLCOTETRASTICHUS gen. n.

Type-species: *Cirrospilus rhosaces* Walker. Gender: masculine.

Frons with median longitudinal line. Malar sulcus present. Anterior margin of clypeus truncate, without distinct teeth. Mandible tridentate. Lower edge of antennal toruli slightly above level of ventral edge of eyes. Antenna: scape and pedicellus without coarse sculpture; of ♀ with 2 or 3 anelli, the first transverse but not laminar, second nearly or quite laminar, third (when present) laminar, funicle and clava each with 3 segments; of ♂ with 4 funicular segments and 3 claval segments, flagellar segments with compact whorls of long dark setae. Pronotum short. Mid lobe of mesoscutum with more or less distinct median line, with one row of adnotaular setae on each side. Scapular flanges rather narrowly triangular. Scutellum (Fig. 34) with submedian and sublateral lines, the latter forming deep and broad grooves which are margined externally and have some strong transverse costulae; two pairs of setae present. Dorsellum with raised reticulation, not uniformly convex but tending to have a weak depression just before the hind margin, which is rather sharp medially. Propodeum medially somewhat longer than dorsellum, relatively strongly reticulate; median carina strong, plicae indicated posteriorly; spiracles moderate-sized, circular, separated by nearly their diameter from hind edge of metanotum, their whole rim normally exposed. Forewing with costal cell slightly shorter than marginal vein; submarginal vein usually with 2 dorsal setae, before and beyond the middle, rarely 3; postmarginal vein a short stub. Gastral petiole subconical, transverse or as long as broad, often with some reticulation in its posterior part, or with traces of some longitudinal carinulae. Gaster subcircular or oval, subobtuse apically; each cercus with one seta about 1·5 times the length of the next longest; tip of ♀ hypopygium situated near tip of gaster, hypopygium (Fig. 35) with posterior margin produced medially and with two prominent teeth.

DISTRIBUTION. Europe, India.

COMMENTS. This genus is distinguished from other Tetrastichinae by the combination of characters given in my keys to European genera (p. 30 and p. 37), particularly the structure of the sublateral scutellar lines.

In addition to the type-species, which is widely distributed in Europe, I have examined an undescribed species from India.

PETALIDION gen. n.

Type-species: *Petalidion hellenicum* sp. n. Gender: neuter.

♀. Frons with median longitudinal line. Malar sulcus present. Anterior margin of clypeus bidentate. Mandible not fully visible. Lower edge of antennal toruli above ventral edge of eyes. Antenna (Fig. 30): scape and pedicellus without coarse sculpture: only one transverse anellus visible; funicle and clava each with 3 segments. Pronotum short. Mid lobe of mesoscutum with very distinct median line, with one row of adnotaular setae on each side. Scapular flanges sublinear. Scutellum with submedian and sublateral lines, with two pairs of setae. Dorsellum not divided longitudinally. Propodeum medially about twice as long as dorsellum, its median portion projecting slightly beyond bases of hind coxae; median carina sharp; area between spiracles with strong, slightly raised reticulation; plicae absent; paraspiracular carinae present, sharp; spiracles very small, subcircular, separated by slightly more than their diameter from hind margin of metanotum; callus with about 6 setae. Metapleuron sculptured like propodeum. Mesosternum flat. Hind coxae with slightly raised reticulation. Forewing with costal cell slightly shorter than marginal vein; submarginal vein with 1 dorsal seta; postmarginal vein a short stub. Gastral petiole about as long as broad, with trace of a median longitudinal carina and with some raised reticulation in posterior half. Gaster ovate, acute, slightly convex dorsally; longest seta of each cercus somewhat longer than next longest, sinuate; tip of hypopygium at about half length of gaster. Body black, metallic, without pale markings.

♂. Unknown.

Differs from *Tetrastichus* Haliday: propodeum without plicae; gastral petiole as long as broad and partly sculptured; gaster not sunken dorsally. Differs from *Oomyzus* Rondani: propodeum with sharp paraspiracular carinae, spiracles more widely separated from metanotum; gastral petiole as long as broad, partly sculptured; gaster not sunken dorsally; antennal flagellum slender, funicular segments longer than broad.

Petalidion hellenicum sp. n.

(Fig. 30)

♀. Head 1·25 times as broad as mesoscutum; POL 9, OOL 4, OD 4. Eyes 1·1 times as long as broad, separated by their own length. Malar space 0·6 length of eye. Antenna (Fig. 30) with scape 0·95 length of eye, reaching vertex; pedicellus plus flagellum 1·7 times breadth of mesoscutum; other features as in the figure. Thorax 1·4 times as long as broad; propodeal slope 50°. Pronotum very short. Mid lobe of mesoscutum 1·2 times as broad as long, convex, reticulation very fine, superficial, with areoles about twice as long as broad; median line strong; 2 adnotaular setae on each side, before and behind the middle respectively, the posterior seta longer. Scutellum as broad as long, strongly convex, more finely reticulate than mesoscutum; submedian lines equidistant from each other and from sublateral lines, enclosed space 3 times as long as broad; setae equal, anterior pair in middle. Dorsellum hardly twice as broad as long. Propodeum with nuchal strip marked off by a strong transverse groove; other features as in generic description. Legs rather slender; hind coxae about twice, hind femora 4·7 times, as long as broad; length of spur of mid tibia hardly greater than breadth of tibia. Forewing about 2·2 times as long as broad; costal cell 14 times as long as broad; marginal vein thin, 3·4 times length of stigmal, its front edge with 10–12 setae; stigmal vein at 60°, slightly curved, thin proximally but gradually expanding, stigma small and oblong; speculum moderate-sized, hardly extending below marginal vein, closed below, wing beyond it rather sparsely pilose (but more thickly distad); cilia 0·3 length of stigmal vein. Hindwing bluntly pointed; cilia 0·3 breadth of wing. Gaster about as long and as broad as thorax, almost smooth.

Body black with greenish blue tint. Antennae brownish with scape testaceous. Legs including all coxae testaceous; tips of tarsi brown. Tegulae brown. Wings hyaline, venation testaceous. Length 1·0 mm.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Greece**: Peloponnisos, Petalidion, 27.viii.1979 (*Bouček*) (BMNH).

HOST. Unknown.

CHAENOTETRASTICHUS gen. n.

Type-species: *Tetrastichus grangeri* Erdös. Gender: masculine.

♀. Frons with median longitudinal line. Malar sulcus present. Mandible (Fig. 26) very characteristic: outer tooth long and falcate, the two inner teeth very small and closely approximated. Anterior margin of clypeus distinctly bidentate. Antennal toruli situated at level of ventral edge of eyes; scape and pedicellus without coarse sculpture; 2 anelli (Fig. 738); funicle and clava each with 3 segments. Pronotum short. Whole dorsal surface of thorax relatively dull, with extremely fine but slightly raised isodiametric reticulation; setae relatively long and suberect. Prepectus, metapleuron and hind coxae with strong raised reticulation. Mid lobe of mesoscutum without median line, with two irregular rows of adnotaular setae on each side. Scutellum with both submedian and sublateral lines, the latter neither broad nor deep; with five or six pairs of long setae. Propodeum medially longer than dorsellum; median carina strong; plicae absent but on each side there is an outwardly-curved paraspiracular carina which runs along the inner edge of the deep and shiny spiracular sulcus; spiracles moderate-sized, circular, separated by about their diameter from hind edge of metanotum, their whole rim exposed. Legs short and stout. Forewing with costal cell slightly shorter than marginal vein; submarginal vein with one dorsal seta; postmarginal vein rudimentary. Gastral petiole transverse. Gaster ovate or elliptic, not longer than thorax, its entire dorsal surface with relatively strong, in places very slightly raised, reticulation; each cercus with one seta nearly twice the length of the next longest, kinked medially. Body distinctly metallic.

♂. Unknown.

DISTRIBUTION. France.

COMMENTS. Recognizable by the form of the mandibles and the large number of scutellar setae. Otherwise seems nearest to *Tetrastichus*, which differs in having sculpture of mesoscutum and scutellum weaker and not raised, composed of more or less elongated areoles, mid line of mesoscutum present, propodeum with plicae, gaster with at most weak alutaceous sculpture, the basal tergite usually smooth.

MISCHOTETRASTICHUS gen. n.

Type-species: *Tetrastichus petiolatus* Erdös. Gender: masculine.

Frons with median longitudinal line. Malar sulcus present. Anterior margin of clypeus truncate, with 2 rather widely spaced, minute tubercles. Mandible tridentate. Antennal toruli distinctly above ventral edge of eyes; scape and pedicellus without coarse sculpture; 2 anelli (Fig. 737); funicle with 3 segments in ♀, with 4 in ♂; flagellar segments of ♂ with whorls of long setae which, however, reach only about half-way along the segment following that which bears them; clava 3-segmented. Thorax (Fig. 27) with pronotum short.

Mid lobe of mesoscutum with median line indicated at least posteriorly and with 1 or 2 adnotaular setae on each side. Scapular flanges narrowly wedge-shaped. Scutellum with both submedian and sublateral lines, the latter neither deep nor broad; with two pairs of short setae. Propodeum medially slightly longer than dorsellum, nearly smooth; median carina present, paraspiracular carinae indicated; spiracles very small, subcircular, separated by about their diameter from hind edge of metanotum, their whole rim exposed. Legs moderately long, rather slender. Forewing with costal cell slightly shorter than marginal vein; submarginal vein with one dorsal seta; postmarginal vein rudimentary. Gastral petiole (Fig. 28) piriform, in ♀ slightly to distinctly longer than broad, with at least traces of three longitudinal carinae, one median and two lateral; in ♂ similar but relatively longer. Gaster of ♀ elliptic or rhomboidal, hardly longer than thorax, acute; cercal setae moderately long but subequal in length. Gaster of ♂ narrower, more wedge-shaped, broadest near tip; genitalia not examined. Body non-metallic, black. Very small species, length 0·7–1·2 mm.

Distribution. Europe.

Host. *Phyllonorycter* (= *Lithocolletis*) *rajella* (L.) subsp. *hauderiella* (Rebel); reared in Czechoslovakia by Gregor (Bouček coll.).

Comments. This genus is distinguished by the combination of a single dorsal seta on the submarginal vein and the long, tricarinate gastral petiole. Other diagnostic characters are given in my keys to European genera (pp. 29 and 36).

The genus was misidentified as *Ceratoneura* Ashmead by Kostjukov (1978*b*: 431). *Ceratoneura erdoesi* Kostjukov and *C. alolica* Kostjukov (1978*b*: 433) are both conspecific with *Mischotetrastichus petiolatus* (Erdös) (**synn. n.**).

THRIPASTICHUS gen. n.

Type-species: *Tetrastichus gentilei* Del Guercio. Gender: masculine.

Frons with median longitudinal line or ridge. Malar sulcus present. Anterior margin of clypeus bidentate. Occipital surface of head, frons, face and temples, with striate-reticulate sculpture. Mandible with a strong acute outer tooth, followed by an obliquely-truncate, serrulate lobe (see Waterston, 1923; fig. 1,C). Antennal toruli situated hardly above ventral edge of eyes; scape and pedicellus without coarse sculpture; anelli in ♀ 4, the first nearly laminar, the others laminar; funicle and clava each with 3 segments; ♂ with 4 funicular and 3 claval segments, the first funicular segment shorter than the others, funicular segments and the first and second claval segments with compact whorls of very long setae. Pronotum short. Mid lobe of mesoscutum with weak median line, with 2 adnotaular setae on each side. Scapular flanges narrowly wedge-shaped. Scutellum with submedian lines (sometimes weak) and two pairs of setae. Propodeum medially much longer than dorsellum, virtually smooth, without median carina or plicae; spiracles very small, suboval, nearly touching metanotum, their whole rim exposed. Legs of medium length, rather slender. Forewing with costal cell slightly shorter than marginal vein; submarginal vein with 2 dorsal setae placed rather close together near the middle; postmarginal vein a short stub. Gastral petiole (Fig. 36) rather conspicuous although slightly broader than long, suboval, smooth, with a seta on each side (often worn off). Gaster of ♀ rather male-like, oblong-elliptic, not longer than and narrower than the thorax, obtuse apically, strongly narrowed basad towards the petiole; each cercus with one seta nearly twice the length of the next longest, kinked; ovipositor concealed, unusually short, hardly more than one-third the length of the gaster. Body black with weak metallic tints; gaster of both sexes with a pale subbasal spot.

Distribution. The single known species has been found in the Holarctic, Indomalayan and Neotropical regions (probably introduced into Europe).

Comments. The genus can be distinguished from other known tetrastichine genera by the structure of the mandibles, the number and unusual position of the dorsal setae on the submarginal vein, and especially by the characters of the ♀ gaster.

Keys to European genera of Tetrastichinae

The following keys are intended primarily for the European fauna. They may work reasonably well for the Palaearctic region, but should be applied with great caution to other areas. The whole of each couplet should be checked to ensure the best results. Genera not treated in the present part are marked *.

Females

1 Antenna (Fig. 13): inner aspect of scape with distinctly raised, honeycomb reticulation; interno-dorsal surface of pedicellus with raised sculpture which forms transverse ridges; 4 distinct anelli whose combined length equals that of the first funicular segment; flagellum short, clavate, funicular segments in European species slightly broader than long. Forewing (Fig. 14): postmarginal vein moderately long, though shorter than the stigmal vein. Species associated with eucalypts; introduced into Mediterranean area **_*QUADRASTICHODELLA_**

— Antenna: these surfaces of scape and pedicellus without raised sculpture, except in *Aprostocetus eurytus* which has funicular segments about twice as long as broad and postmarginal vein (as in the majority of genera which follow) a short stub or rudimentary. Anelli rarely so distinct, usually difficult to see individually, their combined length almost always less than that of the first funicular segment. Species not associated with eucalypts 2

2 Scutellum with numerous setae scattered irregularly over the surface, except sometimes a band down the middle; in the single European species (*debilis* Ratzeburg) without submedian lines. Mid lobe of mesoscutum with a number of setae scattered over its surface. Head including eyes, antennae, thorax dorsally (except dorsellum and propodeum), legs and gaster, rather thickly pilose, the specialized setae hardly exceeding the ordinary ones in length. Malar sulcus absent .... **_*KOCOUREKIA_**

— Scutellum with paired setae: nearly always with 2 pairs, rarely 3 pairs in aberrant specimens, with more than 3 pairs in one European and some extralimital species. Setae of mid lobe of mesoscutum usually confined to the sides. The other parts of the body mentioned are much less hairy but have more specialized setae 3

3 Malar sulcus usually absent, rarely indicated just near the eye. Gaster with tip of hypopygium situated well beyond the middle, or near the apex. Forewing: submarginal vein with 3 to 6 dorsal setae. Mid lobe of mesoscutum without median line 4

— Malar sulcus present and extending from eye to mouth edge, sometimes fine; in some species expanded just below the eye to form a fovea. Gaster with tip of hypopygium rarely situated so far distad. Forewing: submarginal vein sometimes with fewer than 3 dorsal setae. Mid lobe of mesoscutum with or without a median line 6

4 Mid lobe of mesoscutum with setae scattered over its whole surface. Median area of frons (Fig. 15) wedge-shaped, 2·0–3·5 times as high as broad; head in front view as high or a little higher than broad. Forewing with marginal vein 3·5–4·7 times as long as the stigmal vein. Antennal scape at least 0·75 length of eye, very slender proximally but expanded above the middle, 2·7–3·5 times as long as broad .... **_*MELITTOBIA_**

— Mid lobe of mesoscutum with a single row of setae (adnotaulars) on each side near the notauli. Median area of frons (Figs 19, 20) trapeziform, at most slightly higher than broad, sometimes slightly broader than high; head in front view (unless distorted!) usually a little broader than high, occasionally as high as broad. Forewing with marginal vein 2·0–3·2 times as long as stigmal vein. Antennal scape only about 0·5 length of eye, hardly 2·5 times as long as broad ... 5

5 Fore tibia (Fig. 16) with a strong, black, deeply bifid apical spur. Pronotum (Fig. 17) large, transversely subrectangular, with prominent shoulders and subparallel sides. Head in front view (Fig. 19) 1·5–1·7 times as broad as high. Fore coxae large, longer than hind coxae. Exserted part of ovipositor sheaths at least 0·6 length of hind tibia .... **_*CRATAEPUS_**

— Fore tibia with a simple, usually pale, apical spur. Pronotum (Fig. 18) with less prominent shoulders, its sides tending to converge forwards. Head in front view (Fig. 20) at most about 1·3 times as broad as high. Fore coxae not or hardly longer than hind coxae. Ovipositor sheaths hardly, or only slightly, projecting beyond tip of gaster .... **_*PRONOTALIA_**

6 Macropterous species with postmarginal vein almost or quite as long as the stigmal vein (care needed, as the postmarginal vein is sometimes fine and not easy to see). Anterior margin of clypeus (except in *Apotetrastichus lesbiacus*) truncate and without teeth. Spiracles of propodeum small, their whole rim visible from above 7

— *Either* macropterous species with postmarginal vein at most 0·5 length of stigmal vein (though nearly always very short or absent); *or* brachypterous. Anterior margin of clypeus most often bidentate, sometimes truncate. Spiracles of propodeum varying from very small to large; sometimes with the outer part of their rim partly covered (especially in a slightly lateral view) by a raised flap of the callus as in Figs 54, 71, 91–93, 194 9

7 Scutellum without submedian lines; anterior pair of setae well in front of the middle. Forewing: submarginal vein with 3 to 6 dorsal setae .... **_*PECKELACHERTUS_**

— Scutellum with submedian lines; anterior pair of setae not in front of the middle. Forewing: dorsal setae of submarginal vein variable in number, often only 1, sometimes 2 or (*Apotetrastichus postmarginalis*) 3 8

8 Spiracles of propodeum separated by nearly or just twice their diameter from hind margin of metanotum. Thorax distinctly longer than broad; reticulation of mesoscutum and scutellum composed of elongate areoles (mostly 3 to 4 times as long as broad) __*APOTETRASTICHUS*__ (p. 45)

— Spiracles of propodeum almost touching hind margin of metanotum. Thorax hardly longer than broad (Fig. 21); reticulation of mesoscutum and scutellum (Fig. 22) composed of short areoles which vary from nearly isodiametric to about twice as long as broad *__*SPHENOLEPIS*__

9 Forewings rudimentary, or more or less abbreviated 10

— Forewings fully developed 11

10 Hind margin of scutellum projecting over the propodeum, which slopes vertically with respect to the dorsal surface of the thorax. Mid lobe of mesoscutum, and scutellum, each about twice as broad as long, relatively dull, with very slightly raised reticulation composed of isodiametric areoles. Gaster convex dorsally. Forewings rudimentary, hardly extending beyond hind edge of propodeum .... *__*SPHENOLEPIS*__

— Scutellum not projecting over the propodeum, the latter sloping moderately or sometimes nearly horizontal. Mid lobe of mesoscutum and scutellum each less than twice as broad as long, moderately shiny, with lightly engraved reticulation which has some or all of its areoles longer than broad. Gaster usually somewhat sunken dorsally in dried specimens. Forewings shortened but reaching at least slightly beyond hind edge of propodeum (*A. fulvipes* and *A. brevipennis*) .... __*APROSTOCETUS*__ (p. 86)

11 Thorax (Fig. 24) with dorsellum divided medially, either by a longitudinal channel which separates it into two convex lobes (European species) or by a fine longitudinal ridge (one African species). Propodeum: callus with a sharp carina which runs obliquely from the fovea in which the spiracle is placed to the subrectangular or acute hind corner; surface of propodeum with slightly raised reticulation and some rugosity or wrinkles, spiracles small and circular, separated by slightly more than their diameter from hind margin of metanotum. Antenna (Fig. 23): third anellus in European species large, with several setae. Scutellum without submedian lines; sublateral lines deep, their outer edge sharply carinate. Vertex with a transverse ridge behind the ocellar triangle. Lower edge of antennal toruli level with ventral edge of eyes. Mid lobe of mesoscutum without median line. Frons without transverse suture in front of median ocellus .... *__*TETRASTICHOMYIA*__

— Dorsellum normally convex and without a median longitudinal channel or a ridge (in a few extralimital *Tetrastichus* there is a weak longitudinal ridge, but these species have discoid anelli, submedian lines present on the scutellum, vertex lacking a transverse ridge, and mid lobe of mesoscutum with a very distinct median line). Frons most often with a straight or V-shaped suture just in front of the median ocellus, usually extending to near the front edge of the lateral ocelli and sometimes continued to the eyes 12

12 Propodeum (Fig. 25) with plicae which extend from hind margin to near each spiracle, or even to the base; from about the middle of each plica a branch (paraspiracular carina) extends towards the hind corner of the propodeum, the space between plica and paraspiracular carina sometimes forming a raised, reticulate triangular platform; surface between the plicae reticulate with this reticulation nearly always slightly raised, sometimes with some additional carinulae or rugulose sculpture; propodeum medially slightly to much longer than the dorsellum. Hind coxae in most species with some raised reticulation or rugosity on their externo-dorsal surface. Forewing: submarginal vein in most species with only 1 dorsal seta (with 2 or rarely 3 setae in a few extralimital species and in occasional aberrations of some European species). Body black with at least a slight metallic tinge, often strongly metallic, not pale-marked, except rarely the gaster .... *__*TETRASTICHUS*__

— Propodeum in nearly all species without plicae or with these indicated at the hind margin in a few; very rarely complete, but then their basal part runs considerably mesad of the spiracles, whilst the surface between them is shiny and weakly sculptured, and the hind coxae are shiny with weak superficial reticulation; paraspiracular carinae most often absent or weak, rarely sharp. Propodeum in many species only as long as, or shorter than, the dorsellum. Forewing: submarginal vein with 1, 2 or more dorsal setae. Body metallic or non-metallic, sometimes pale-marked or mainly pale 13

13 Forewing: submarginal vein with 1 dorsal seta [rarely there is 1 seta on one wing and 2 setae on the other; such cases are provided for by inclusion in both sections of the key] 14

— Forewing: submarginal vein with 2 or more dorsal setae 20

14 Scutellum with 5 or 6 pairs of setae. Mandible (Fig. 26) with long falcate outer tooth and two very small and closely approximated inner teeth. Whole dorsal surface of thorax relatively dull, with very fine but distinctly raised reticulation; mid lobe of mesoscutum without a median line, with long suberect setae which form 2 or 3 irregular rows on each side. Dorsal surface of gaster wholly finely reticulate. Body brightly metallic, green to blue-green **_CHAENOTETRASTICHUS_** (p.25)

— Scutellum normally with 2 pairs of setae (with 3 setae on one or both sides in occasional aberrations). Mandible tridentate with the 2 inner teeth relatively large, the innermost tending to be rounded or subtruncate (Figs 15, 289). The other characters not all agreeing with those of the alternate part of the couplet 15

15 Gastral petiole (Fig. 28) conspicuous, 1·2–1·7 times as long as broad, with at least traces of 3 longitudinal carinae. Anterior margin of clypeus subtruncate with 2 minute, rather widely spaced, tubercles. Spiracles of propodeum (Fig. 27) very small, circular, separated by about their diameter from hind margin of metanotum. Vertex, upper part of occipital surface, and pronotum, with rather coarse and slightly raised reticulation which contrasts with the excessively fine, engraved, longitudinally lineolate sculpture of the mesoscutum and scutellum. Body black, non-metallic; fore coxae mainly black, mid and hind coxae at least mainly yellow .... **_MISCHOTETRASTICHUS_** (p. 25)

— Gastral petiole at least slightly broader than long, nearly always without longitudinal carinae, rarely with traces of a median carina, in other species with some vague reticulation in its posterior part. Anterior margin of clypeus most often distinctly bidentate. Spiracles of propodeum usually larger and nearer to hind margin of metanotum. Sculpture of vertex and other parts mentioned often different from above. Body sometimes metallic, or pale-marked; if the fore coxae are black, then the mid and hind coxae are also black 16

16 Propodeum about twice as long as the dorsellum, its median portion or nucha projecting backwards slightly behind level of posterior edges of supracoxal flanges; surface relatively dull, with strong, raised reticulation; paraspiracular carinae present. Gastral petiole about as long as broad, with trace of a median carina; gaster hardly sunken dorsally but slightly convex. Antenna (Fig. 30) with flagellum long and slender, all funicular segments longer than broad. Mid lobe of mesoscutum with a distinct median line .... **_PETALIDION_** (p. 24)

— Propodeum not simultaneously so long and so strongly reticulate except in some *Oomyzus* in which its middle part usually does not project backwards behind the level of the supracoxal flanges; also in that genus the gastral petiole is distinctly transverse and smooth or nearly so, whilst the antennal flagellum is short and stouter, with funicular segments not longer than broad, and mid lobe of mesoscutum lacks a median line. Gaster usually more or less sunken dorsally 17

17 Mid lobe of mesoscutum (Fig. 33) with two relatively strong adnotaular setae on each side, before and behind the middle respectively, the two setae virtually equal in length and suberect. Anterior margin of clypeus (Fig. 32) truncate, usually without teeth, rarely with 2 minute tubercles. Forewing with marginal vein slightly to much shorter than the costal cell. Relatively squat species with thorax at most 1·3 times as long as broad; body black, occasionally with weak metallic tints; gaster sometimes partly to mainly yellow, rarely the head more or less yellow. Hypopygium (Fig. 31) with anterior margin almost straight; setae of disc arising from sublinear bases. Parasites of Hemiptera: Psylloidea ..... ***_TAMARIXIA_**

— Mid lobe of mesoscutum with 1 to 5 adnotaular setae on each side; if with 2, then anterior margin of clypeus distinctly bidentate (as in nearly all species of the following section, though weakly in one) whilst the adnotaular setae differ in some respect from those of *Tamarixia* (either the anterior seta of each side is shorter than the posterior seta, or is not situated before the middle, or else both setae are reclinate). Marginal vein sometimes as long as or longer than the costal cell; thorax sometimes more elongate; body often with distinct metallic tints, or with some parts yellow. Hypopygium (Figs 659, 661–686) with anterior margin trilobed; setae of disc arising from simple annular bases. Not parasites of Psylloidea, so far as known 18

18 Body at least slightly metallic; antennal flagellum relatively slender with all funicular segments longer than broad; one seta of each cercus nearly or quite twice the length of the next longest, kinked in the middle; marginal vein slightly to distinctly longer than costal cell. Mesosternum

flat or virtually so; propodeal spiracles very small or minute. (A very few aberrant forms of subgenera *Ootetrastichus* and *Chrysotetrastichus*.) .... ***APROSTOCETUS*** (p. 86)

— *Either* body is non-metallic, black or black and yellow; *or* funicular segments of antenna not all longer than broad, cercal setae subequal in length or one seta at most 1·5 times the length of the next longest, and marginal vein at most as long as costal cell; *or* mesosternum convex and propodeal spiracles small to moderate-sized 19

19 Antenna with all funicular segments longer than broad, the first nearly always as long as or longer than the pedicellus, the third 1·5 to 3·5 times as long as broad. Mid lobe of mesoscutum in most species with only 1 adnotaular seta on each side, in posterior half; a few with 2 or 3 setae, in which case *either* the body is non-metallic and sometimes more or less yellow; *or* thorax is 1·35–1·50 times as long as broad *and* gaster is at least twice as long as broad. Antennal flagellum relatively long and slender; funicular segments, or at least the third, with some long curved setae whose length equals or exceeds the breadth of the segments. Metapleuron and propodeum usually with very weak engraved or superficial reticulation, rarely slightly raised .... *_**CECIDOTETRASTICHUS**_

— Usually at least the third funicular segment subquadrate to slightly transverse; first segment often shorter than the pedicellus; if the third segment is distinctly longer than broad, then mid lobe of mesoscutum has 2 to 5 adnotaular setae on each side, body is black with slight to strong metallic tints, thorax is only very slightly longer than broad, and gaster is at most 1·6 times as long as broad. Antennal flagellum usually short and thick; funicular segments usually with relatively short setae, occasionally long ones on third segment, rarely also on second segment. Metapleuron and propodeum often with distinct, at least very lightly raised, reticulation .... *_**OOMYZUS**_

20 Scutellum (Fig. 34); sublateral lines forming very deep and broad grooves which are margined externally and have some strong transverse costulae; flange of hind margin of scutellum with longitudinal costulae and usually very broad. Anterior margin of clypeus subtruncate, without distinct teeth. Forewing: submarginal vein usually with 2, occasionally 3, dorsal setae. Dorsellum with raised reticulation, not evenly convex but with a shallow depression before its hind margin, which is sharp medially. Body black, non-metallic. First segment of mid and hind tarsi slightly shorter than second. Gastral petiole distinct, not more than 1·6 times as broad as long, expanded posteriorly to form a transverse ridge which is usually more or less reticulate or bears traces of longitudinal carinulae. Tip of hypopygium situated near tip of gaster. Posterior margin of hypopygium (Fig. 35) produced and bidentate medially ***HOLCOTETRASTICHUS*** (p. 23)

— Scutellum (Figs 48, 81, 91–93, 442–443) with sublateral lines nearly always shallow, narrow, and lacking transverse costulae, or with very fine ones; rarely (some *Aceratoneuromyia* and *Sigmophora*) resembling those of *Holcotetrastichus*, but then anterior margin of clypeus bidentate and submarginal vein with 3 or more dorsal setae. Dorsellum evenly convex, its hind edge not sharp, generally weakly reticulate or nearly smooth. Body often more or less metallic, or pale-marked. First segment of mid and hind tarsi usually as long as or longer than second. Gastral petiole most often smooth, sometimes more strongly transverse than in above. Tip of hypopygium nearly always situated less far distad on the gaster. Posterior margin of hypopygium (Figs 660–676, 678–685) not or hardly produced medially, its side lobes often extending farther back than the median part 21

21 Forewing; submarginal vein with 2 dorsal setae which are fairly close together near the middle. Gaster (Fig. 36) much narrowed at base, with distinct suboval petiole which has a seta on each side (often worn off), apically obtuse, with a pale subbasal spot; ovipositor concealed. Mandible with an acute outer tooth and an obliquely truncate, serrulate lobe. Occipital surface of head, frons, face and genae, with fine striate-reticulate sculpture. Head and thorax black with weak violet and bluish tints .... ***THRIPASTICHUS*** (p. 26)

— *Either* the submarginal vein of the forewing has 3 or more dorsal setae; *or* the other characters differ. Gaster nearly always with a differently-shaped petiole, ovipositor sheaths usually at least very slightly exserted, sometimes very long. Mandible tridentate. Head nearly always with reticulate, not striate-reticulate, sculpture. Body often non-metallic, or pale-marked (though rarely the gaster alone) 22

22 Malar sulcus indicated but weak and superficial. Antennal toruli placed well below level of ventral edge of eyes. Forewing with a decolorized break separating parastigma from marginal vein. Body black with hardly perceptible metallic tinge. Tip of hypopygium situated slightly beyond middle of gaster. Frons without a median longitudinal line but with a

trapeziform median area .... ***PRONOTALIA**

— Malar sulcus distinct though sometimes fine. Antennal toruli placed at a higher level and forewing without such a decolorized break *except* in some *Eutetrastichus* in which the body is distinctly metallic and the tip of the hypopygium is most often placed in or before the middle of the gaster. Frons most often with median longitudinal line, rarely with a median area 23

23 Mid lobe of mesoscutum with setae scattered over its whole surface, and without a median line. Scutellum without submedian lines; anterior pair of setae before the middle. Propodeal callus with a longitudinal crest or carina which runs from just outside the spiracle to the hind corner of the propodeum, which tends to be subrectangular. Thorax, and usually head, with at least a slight metallic tinge. Vertex with a weak transverse ridge medially, behind the ocellar triangle .... ***NESOLYNX**

— Mid lobe of mesoscutum in most species with setae confined to the sides, or leaving at least a broad median longitudinal tract bare; if with setae scattered over its whole surface (some *Eutetrastichus*, a few *Aprostocetus*) then scutellum with distinct submedian lines. Propodeal callus without longitudinal crest or carina except in some *Sigmophora*, which have the body non-metallic, yellow and black. Vertex (except in *Sigmophora*) without transverse ridges..... 24

24 Vertex (Fig. 37) with a sharp transverse carina separating the vertex from the occiput, and reaching or nearly reaching the eyes; usually a second carina within the ocellar triangle, occasionally a third at the upper edge of the antennal scrobes. First segment of mid and hind tarsi slightly to somewhat shorter than second. Mid lobe of mesoscutum with adnotaular setae placed in a shallow channel or depressed area (Fig. 37). Propodeal callus often with a longitudinal carina running from just outside each spiracle to hind corner of propodeum. Antenna with 3 anelli of which the third is usually the largest. Body yellow and black, non-metallic (rarely wholly black in dark northern forms). Mid lobe of mesoscutum in European and most other species without a median line. Malar sulcus most often with a subtriangular fovea just below the eye .... ***SIGMOPHORA*** (p. 76)

— Vertex usually without transverse carinae, occasionally a very vague trace of one in *Kolopterna*, but then first segment of mid and hind tarsi much shorter than second. The other characters not all present in combination.. 25

25 First segment of mid and hind tarsi (Figs 38, 39) much shorter than second. Malar sulcus (Fig. 40) with a sublinear fovea below eye. Forewing (Figs 79, 80) with marginal vein shorter than or at most as long as the costal cell. Body yellow and black, non-metallic ***KOLOPTERNA*** (p. 80)

— First segment of mid and hind tarsi usually at least as long as second, occasionally slightly shorter (some *Eutetrastichus* and *Aprostocetus*) but then malar sulcus not foveate, body at least slightly or partly metallic 26

26 Hind coxa (Fig. 41) with a fine curved dorsolateral carina. Propodeum (Fig. 42) with a sharp curved paraspiracular carina on each side; area between the two carinae with distinct, slightly raised reticulation; outside the carinae smoother. Ocelli (Fig. 43) enclosed in an area marked off by impressed lines; just outside each lateral ocellus there is a shallow subtriangular fovea. Antenna with 3 anelli. Body conspicuously metallic .... ***ANAPROSTOCETUS*** (p. 84)

— Hind coxa without such a carina. Propodeum nearly always without, or with at most vague paraspiracular carinae; if with rather more distinct carinae, then *either* the surface between them has weak, superficial reticulation, *or* the body is black without metallic tints. Ocelli usually not enclosed in such a distinct area; there is rarely a distinct fovea outside the lateral ocellus. Antennae with 2, 3 or (often) 4 anelli 27

27 Antenna: funicle with 4 segments, the first usually longer than broad and bearing one or more sensilla, rarely quadrate and lacking sensilla; clava with 3 segments. Body non-metallic, black with more or less entensive yellow and tan markings, or mainly yellow. (*Aprostocetus*, *elongatus*-group) .... ***APROSTOCETUS*** (p. 86)

— Antennal funicle normally with 3 segments and clava with 3 [a very few extralimital species have 4 funicular segments because the first claval segment is constricted off from the clava, which is then 2-segmented] 28

28 Malar sulcus with a conspicuous subtriangular or oblong fovea just below the eye, extending down the gena from 0·20 to 0·66 of its length.. 29

— Malar sulcus usually without a fovea, rarely with a minute one 30

29 Pronotum, in exact dorsal view of the thorax (Figs 91–93), appearing in most species subconical and 0·50–0·65 length of mesoscutum; if less than 0·50 then anterior setae of scutellum much nearer to sublateral lines than to submedian lines, body brightly metallic. Scutellum nearly always as long as or slightly longer than the mesoscutum, as long as or a little longer than

broad; anterior setae in most species at least slightly before the middle, slightly to much shorter than posterior setae, usually nearer to sublateral lines than to submedian lines or equidistant from both (if nearer to submedian lines then marginal vein of forewing 6·0–9·5 times as long as stigmal vein). Propodeum slightly to much longer than dorsellum. Mid lobe of mesoscutum nearly always without a median line, occasionally with a rather broad but shallow linear depression. Thorax moderately arched dorsally. POL not or hardly greater than OOL. Antennae with flagellum relatively long and slender, filiform or weakly clavate; first funicular segment nearly always slightly to much longer than pedicellus, rarely only as long as pedicellus, 2·5–5·5 times as long as broad. Body either metallic, or more or less yellow.. ***NEOTRICHOPOROIDES*** (p. 55)

— Pronotum, in exact dorsal view of thorax, appearing shorter, at most 0·3 length of mesoscutum, but usually less. Scutellum usually distinctly shorter than mesoscutum and at least slightly broader than long; anterior setae nearer to submedian than to sublateral lines or, if submedian lines are absent, then thorax is flattened dorsoventrally and body is black and non-metallic. Forewing with marginal vein at most 5·5 times as long as stigmal vein. Propodeum most often as long as or shorter than the dorsellum, rarely somewhat longer. Mid lobe of mesoscutum often with fine median line. POL often distinctly greater than OOL. Antennal flagellum usually relatively shorter and more or less clavate; first funicular segment usually from quadrate to twice as long as broad, if somewhat more then *either* body is non-metallic, *or* propodeum is not longer than dorsellum.. 30

30 Forewing (Fig. 86) with stigmal vein very short, much shorter than the parastigma; marginal vein 7·0–9·5 times as long as the stigmal. Anterior setae of scutellum at least slightly nearer to sublateral lines than to submedian lines; scutellum as long as or slightly longer than mesoscutum, most often as long as or a little longer than broad. Propodeum medially 1·5–2·2 times length of dorsellum, most often with strong and slightly raised reticulation; median carina strong and sharp; callus with (3–) 4–7 setae. Pronotum, as seen in exact dorsal view of thorax, normally at least 0·5 length of mesoscutum, rarely a little less. Mid lobe of mesoscutum normally without median line, rarely a broad shallow linear depression. POL not or hardly greater than OOL. Body either extensively to wholly yellow; or brightly metallic with no or restricted pale markings. Antennal flagellum long, filiform or nearly so; first funicular segment 1·5–2·3 times as long as pedicellus........ ***NEOTRICHOPOROIDES*** (p. 55)

— Forewing with stigmal vein relatively longer; marginal vein at most 6 times as long as stigmal but usually less; if as much as 6 times, then stigmal vein only slightly shorter than the parastigma. Anterior setae of scutellum in most species nearer (often much nearer) to submedian lines than to sublateral lines; if nearer to sublateral lines, or submedian lines absent, then scutellum slightly to very distinctly broader than long and usually somewhat shorter than the mesoscutum. Propodeum medially usually as long as or shorter than the dorsellum, rarely longer, most often weakly reticulate; median carina sometimes weak; callus most often with 2 setae, sometimes 3 or more. Pronotum, viewed dorsally, rarely as much as 0·5 length of mesoscutum, often much less than this. Mid lobe of mesoscutum often with median line. POL often greater than OOL. Body sometimes wholly or mainly black and non-metallic. Antennal flagellum often relatively short, and with first funicular segment often shorter than or about as long as the pedicellus.. 31

31 Thorax depressed dorsoventrally, weakly arched so that the surfaces of the mesoscutum, scutellum, dorsellum and propodeum lie nearly in the horizontal plane; scutellum in profile flat or almost so. Antennae most often inserted low on the head, with their toruli about level with lower edge of eyes.. 32

— Thorax moderately to strongly arched dorsally, with surfaces of dorsellum and propodeum sloping at a distinct angle to the tangential plane of mesoscutum and scutellum; scutellum in profile at least slightly, but most often moderately to strongly, convex. Antennae usually inserted higher on the head.. 34

32 Submedian lines of scutellum usually absent or obsolescent, rarely distinct. Mid lobe of mesoscutum usually with at least some trace of a median line. Body black, non-metallic, or with at most a weak bronze tinge.. 33

— Submedian lines of scutellum very distinct. Mid lobe of mesoscutum usually with at least some trace of a median line. Body with greenish to bluish metallic tints................................. 34

33 Antennal clava (Fig. 45) with apical seta of terminal spine about twice as long as the spine (this seta is sometimes broken off, therefore the other characters noted below should be checked). Gaster in dorsal view (Fig. 44) obtuse or bluntly pointed apically, ovipositor

sheaths concealed, spiracles of penultimate segment usually visible though sometimes partly covered by the hind edge of the preceding tergite. Tip of hypopygium situated at 0·75–0·80 length of gaster measured from the base. Anterior margin of hypopygium (Fig. 46) truncate. Setae of vertex, or at least one seta situated between each lateral ocellus and the eye, very long (their length nearly or quite twice the diameter of an ocellus). Anterior setae of scutellum situated in hind half of the sclerite and usually relatively close to the posterior setae ***ACERATONEUROMYIA**

— Antennal clava with apical seta of terminal spine not or hardly longer (sometimes shorter) than the spine. Gaster in dorsal view acutely pointed apically with ovipositor sheaths projecting at least very slightly, often far exserted beyond tip of last tergite; spiracles of penultimate tergite not visible. Tip of hypopygium situated not farther back than 0·6 length of gaster. Anterior margin of hypopygium (Fig. 674) trilobed. Setae of vertex often relatively shorter. Anterior setae of scutellum nearly always situated in or before the middle and relatively distant from the posterior setae........ ***APROSTOCETUS*** (p. 86)

34 Forewing (Fig. 47) with apical margin bare. Anterior margin of clypeus truncate. Spiracles of propodeum circular, separated by about their diameter from hind margin of metanotum, their whole rim exposed. Both pairs of scutellar setae (Fig. 48) nearer to sublateral lines than to submedian lines (the posterior pair very close to sublateral lines). Body non-metallic, testaceous with brown markings........ ***XENAPROSTOCETUS*** (p. 365)

— Forewing with apical margin nearly always ciliate, if bare then anterior margin of clypeus bidentate, and *either* (*Aprostocetus calvus*) spiracles of propodeum oval and almost touching metanotum, both pairs of scutellar setae about equidistant from submedian and sublateral lines; *or* (two species of *Eutetrastichus*) body black with metallic tints........ 35

35 Propodeal spiracles circular, separated by at least 1·5 times their diameter from hind edge of metanotum. Thorax not strongly flattened. Forewing at most 2·3 times as long as broad. Anterior margin of clypeus truncate........ ***MINOTETRASTICHUS*** (p. 49)

— Propodeal spiracles almost always separated from hind margin of metanotum by less (often much less) than their major diameter; if by more than their diameter than (*Aprostocetus askewi*) thorax strongly flattened and forewing about 3 times as long as broad. Anterior margin of clypeus always bidentate, though in *Minotetastichus* the teeth are represented by low curved lobes........ 36

36 Propodeal spiracles (Fig. 49) very small or minute, their whole rim exposed. *Either* the setae of each cercus are subequal in length *and* the body is metallic with yellow markings or mainly yellow; *or* antenna (Fig. 67) has a conspicuous terminal spine which is nearly as long as the third segment of the clava........ ***MINOTETRASTICHUS*** (p. 49)

— Propodeal spiracles usually moderate-sized, if very small or minute (*Aprostocetus* subgenera *Chrysotetrastichus* (Fig. 55) and *Ootetrastichus*) then one seta of each cercus is much longer than the others. Claval spine relatively shorter, body often without yellow markings........ 37

37 At least two setae of each cercus equal or subequal in length, relatively short, sometimes inconspicuous amongst the other setae which clothe the last tergite, usually pale and weakly curved or straight........ 38

— One seta of each cercus 1·3–2·0 times the length of the next longest, most often dark, usually more or less kinked or sinuate, occasionally curved........ 39

38 Thorax strongly flattened, much broader than high. Body and tegulae normally black with metallic tints but not pale-marked; rarely with sides of dorsellum, face, and upper angle of mesopleuron, marked with yellow........ ***EUTETRASTICHUS**

— Thorax distinctly arched and convex dorsally, at most slightly broader than high. Body sometimes more extensively pale-marked, or non-metallic........ 39

39 Body and tegulae black, with metallic tints, not pale-marked. Propodeal spiracles normally (Fig. 51) having their whole rim exposed, the rim of the outer side visible even in oblique side view (Fig. 52). *Either* the mesosternum (Fig. 50) is convex just in front of the trochantinal lobes; or the forewing has at least some trace of a decolourized area delimiting the parastigma from the marginal vein (Fig. 53). POL at least twice OOL. Mesepisternum in most species without a precoxal suture, or with this virtually obsolete. Mid lobe of mesoscutum often with more than one row of adnotaular setae on each side. Propodeal callus nearly always with 3 or more setae. Malar sulcus in most species curved ***EUTETRASTICHUS**

— *Either* body and/or tegulae pale-marked (sometimes extensively) or non-metallic; *or* differing in some other character: in most species the propodeal spiracles have the rim of their outer side more or less covered by a raised lobe of the callus (Figs 54, 71, 91–93, 294–295, 396) and not visible in oblique side view; mesosternum nearly always flat just in front of the trochantinal lobes and forewing lacking a decolourized area on the submarginal vein, POL often less than twice OOL, mesepisternum in most species with a distinct though superficial precoxal suture traceable over the posterior two-thirds, occasionally only the posterior third, mid lobe of mesoscutum rarely with more than one row of adnotaular setae on each side (if more than one the body is not distinctly metallic), propodeal callus most often with 2 setae, occasionally more, malar sulcus in many species straight 40

40 Submarginal vein of forewing with 3 or more dorsal setae (most species of this genus) **APROSTOCETUS**(p. 86)

— Submarginal vein of forewing with 2 dorsal setae, or occasionally with only 1 seta on one wing... 41

41 Antennal clava (Fig. 155) solid or with at most its first segment indistinctly separated from the rest of the clava (*Aprostocetus (Coriophagus) miridivorus* and *A. (Ootetrastichus) askewi*) **APROSTOCETUS**(p. 86)

— Antennal clava with at least its first segment distinctly separated from the rest of the clava by a suture 42

42 *Either* mesosternum, just in front of the trochantinal lobes, virtually flat, and precoxal suture indicated by a fine line extending one-third to two-thirds the length of the mesosternum (*Aprostocetus* subgen. *Chrysotetrastichus*, a few species of *Aprostocetus* s.str.); *or* (most species of subgen. *Ootetrastichus*) longest seta of each cercus about twice length of next longest and more or less kinked medially, forewing subcubital line of setae extending basad to level of basal vein, body slightly to strongly metallic, or more or less yellow, legs most often yellow with at most coxae dark, occasionally femora dark, rarely the tibiae **APROSTOCETUS**(p. 86)

— Mesosternum slightly convex; precoxal suture absent; longest seta of each cercus either less than twice length of next longest, or else not kinked; subcubital line of setae on forewing not reaching basad as far as level of basal vein; body black with at most a weak bluish or bronze tinge; coxae, and femora mainly, black, tibiae sometimes infuscate 43

43 Propodeum medially as long as, or slightly longer than the dorsellum. Gaster ovate, at most as long as head plus thorax (one aberrant species).................................... ***OOMYZUS**

— Propodeum medially usually slightly shorter than dorsellum; if not then gaster lanceolate, longer than head plus thorax (aberrant specimens of *vacuna* (Walker) only) ***CECIDOTETRASTICHUS**

Males

1 Inner surface of antennal scape with distinctly raised, honeycomb reticulation; interno-dorsal surface of pedicellus with slightly raised reticulation which forms transverse ridges (Fig. 13); flagellum short, slightly clavate, funicular segments in European species slightly transverse or quadrate. Forewing (Fig. 14) with postmarginal vein moderately long. Introduced species associated with eucalypts .... ***QUADRASTICHODELLA**

— Inner surfaces of antennal scape and pedicellus without raised reticulation except in *Aprostocetus eurytus*, which has antennal flagellum long and filiform, funicular segments about twice as long as broad, and postmarginal vein (as in most of the genera that follow) rudimentary or a short stub. Species not associated with eucalypts................................ 2

2 [? Scutellum with numerous setae scattered irregularly over the surface, except perhaps in the median line; submedian lines absent. Unknown males of *Kocourekia* might have these characters.]

— Scutellum with paired setae; nearly always 2 pairs, rarely 3 or more in which case the scutellum has distinct submedian lines 3

3 Malar sulcus usually absent, rarely indicated just near the eye 4

— Malar sulcus present and complete, though sometimes fine; in some species expanded just below the eye to form a fovea 6

4 Brachypterous; head (Fig. 56) without sutures, ocelli minute, eyes absent or represented by a small scar; antennal scape (Fig. 57) long, its length about two-thirds height of head, very strongly expanded distally, where there is a projecting lobe or spine and behind this (in most species) a large hollow. Trochanter and femur of mid leg with a fringe of long, outstanding setae beneath. Spur of hind tibia virtually or just as long as basitarsus ...... ***MELITTOBIA**

— Macropterous; ocelli small to large, eyes always normally developed; antennal scape shorter, its length at most hardly half the height of the head, not so strongly expanded distally, with at most a small hollow. Trochanter and femur of mid leg without such a fringe. Spur of hind tibia shorter than basitarsus 5

5 Fore tibia with a strong black, deeply bifid apical spur. Head in front view 1·5–1·7 times as broad as high. Fore coxae about 1·3 times as long as hind coxae .... ***CRATAEPUS**

— Fore tibia with a simple, usually pale, apical spur. Head in front view at most 1·3 times as broad as high. Fore coxae not or hardly longer than hind coxae .... ***PRONOTALIA**

6 Macropterous: postmarginal vein nearly or quite as long as the stigmal vein. Anterior margin of clypeus truncate, nearly always without teeth, rarely with minute teeth. Propodeal spiracles very small, their whole rim exposed 7

— Species *either* macropterous but with postmarginal vein at most half as long as the stigmal (though nearly always very short or even absent); *or* brachypterous. Anterior margin of clypeus most often bidentate, sometimes truncate. Propodeal spiracles small, moderate-sized, or large 9

7 Scutellum without submedian lines; anterior pair of setae well before the middle. Antenna (Fig. 58) with funicular segments not constricted apically, without whorls of long setae; clava without a constriction between its first and second segments .... ***PECKELACHERTUS**

— Scutellum with both submedian and sublateral lines; anterior pair of setae not before the middle. Antennae (Figs 60, 61) with funicular segments constricted apically, each with a whorl of long setae; clava with a strong constriction between its first and second segments, so that the funicle appears almost 5-segmented 8

8 Propodeum: spiracles separated by 1·5–2·0 times their diameter from hind margin of metanotum; surface of propodeum with delicate, superficial reticulation. Reticulation of mesoscutum and scutellum composed of elongate areoles (mostly 3–4 times as long as broad) **APOTETRASTICHUS**(p. 45)

— Propodeum: spiracles almost touching hind margin of metanotum; surface of propodeum with stronger, slightly raised reticulation. Reticulation of mesoscutum and scutellum composed of short areoles (from nearly isodiametric to about twice as long as broad) ***SPHENOLEPIS**

9 Dorsellum (see Fig. 24) in the single European species with a pair of convex lobes separated by a median longitudinal channel [in another, extralimital species divided by a median longitudinal ridge]. Brachypterous, with forewings not reaching tip of gaster, and more than 3 times as long as broad. Propodeum (Fig. 24): callus with a sharp carina which runs obliquely from the fovea in which the spiracle is placed, to the rectangular or acute hind corner; surface of propodeum with slightly raised reticulation and some rugosity or wrinkles; spiracles small, circular, separated by slightly more than their diameter from hind margin of metanotum. Antenna (Fig. 59) with third anellus in European species large, with some setae; flagellum without whorls of long dark setae; toruli about level with lower edge of eyes. Scutellum without submedian lines; sublateral lines deep, their outer edge sharply carinate. Mid lobe of mesoscutum without median line. Legs short and stout, tarsal segments short ***TETRASTICHOMYIA**

— Dorsellum nearly always convex and without a median longitudinal channel or ridge; very rarely with a weak ridge, in which case the wings are fully developed, whilst the other characters do not agree with the above 10

10 Propodeum (Fig. 25) with curved plicae which extend from the hind margin to near each spiracle, or even to the base; from about the middle of each plica a branch (paraspiracular carina) extends towards the hind corner of the propodeum; surface between the plicae reticulate, the reticulation nearly always at least slightly raised; medially the propodeum is slightly to much longer than the dorsellum. Hind coxae in most species with some raised reticulation or rugosity on their externo-dorsal surface. Forewing: submarginal vein in most species with only 1 dorsal seta (with 2 setae in a few extralimital species and in occasional aberrations of some European species). Body black with a slight to strong metallic tint, not pale-marked (except rarely the gaster). Antennal scape with a long ventral sensory plaque, centred about in the middle .... ***TETRASTICHUS**

— Propodeum in nearly all species without plicae, or with plicae indicated at the hind margin in a few; very rarely complete, but then their basal part runs considerably mesad of the spiracles, whilst the surface between them is shiny and weakly sculptured, and the hind coxae are shiny with only weak superficial reticulation; paraspiracular carinae most often absent or weak, rarely sharp. Propodeum in many species only as long as, or shorter than, the dorsellum.

Forewing: submarginal vein with 1, 2 or more dorsal setae. Body metallic or non-metallic, sometimes pale-marked or mainly pale 11

11 Antenna (Fig. 60); first segment of clava separated from the second by a short peduncle, so that the funicle appears to be 5-segmented; the long whorled setae of the funicular segments arise from about the middle of each segment; scape with a short ventral plaque placed slightly below the middle. Forewing sometimes somewhat shortened; submarginal vein usually with 1 dorsal seta, occasionally with 2 setae; postmarginal vein nearly as long as stigmal vein. Body black, non-metallic. Thorax squat, only slightly longer than broad ***SPHENOLEPIS**

— Antenna with first segment of clava usually broadly attached to the second, sometimes marked off by a constriction; rarely by a short peduncle, in which case the long whorled setae (if present) arise from near the bases of the funicular segments, whilst the sensory plaque of the scape is either longer or is placed differently. Forewing rarely shortened; postmarginal vein at most half as long as stigmal, but usually very short or absent. Body often metallic, sometimes pale-marked 12

12 Forewing: submarginal vein with only 1 dorsal seta (rare aberrations have a single seta on one wing and two on the other; such cases are allowed for in the key) 13

— Forewing: submarginal vein with 2 or more dorsal setae 18

13 Gastral petiole (see Fig. 28) conspicuous, about 1·5 times as long as broad, with traces of 3 longitudinal carinae. Anterior margin of clypeus subtruncate, with 2 minute submedian tubercles. Propodeal spiracles very small, circular, separated by about their diameter from hind margin of metanotum. Body black, non-metallic .... ***MISCHOTETRASTICHUS*** (p. 25)

— Gastral petiole usually at least slightly broader than long, if as long as broad then without longitudinal carinae. Anterior margin of clypeus often with distinct teeth. Propodeal spiracles often moderate-sized or large, usually closer to metanotum. Body often more or less metallic-tinged 14

14 Antenna: flagellum with whorls of very long dark setae; ventral plaque of scape extremely short, its length at most 0·2 that of the scape, placed near the middle; first funicular segment distinctly shorter than the following segments and not or hardly longer than broad. Anterior margin of clypeus truncate, without teeth or rarely with 2 minute tubercles. Mid lobe of mesoscutum with 2 subequal and suberect adnotaular setae on each side, one before and the other behind the middle. Genitalia characteristic: digitus 4–6 times as long as broad, with a curved apical spine the outer edge of which is continuous with the line of the outer edge of the digitus itself; the whole genital armature (not counting the very elongate aedeagus, which is often extruded) 4–8 times as long as broad .... ***TAMARIXIA**

— *Either* the antennal flagellum lacks whorls of long dark setae; *or* the ventral plaque of the scape is at least 0·35 the length of the scape *and/or* the first funicular segment is distinctly longer than broad. Anterior margin of clypeus nearly always distinctly bidentate. Mid lobe of mesoscutum with one to several adnotaular setae on each side, when with two they tend to be unequal in length or are placed differently from those of *Tamarixia*. Genitalia with relatively shorter digitus, which has a spine placed in the middle of its hind margin 15

15 Antenna (Fig. 170): funicular segments with whorls of very long dark setae. Forewing (Fig. 160) only 1·9–2·0 times as long as broad, with tip of marginal vein situated at about 0·4 length of wing. Body black, with weak metallic tints (some specimens of *suevius*-group) ***APROSTOCETUS*** (p. 86)

— Antenna: funicular segments usually lacking such whorls of setae, or with whorls of much shorter setae; if with longer setae (*anysis*-group of *Cecidotetrastichus*) then body is non-metallic and often yellow-marked 16

16 Antenna (Figs 144, 145): scape greatly swollen and bladder-like, only 1·5–2·0 times as long as broad. Propodeum shiny, with obsolescent sculpture. Body metallic with at least part of the head, and the base of the gaster, yellow. Forewing with marginal vein longer than costal cell. One seta of each cercus about twice the length of the next longest (some specimens of *crino* and *ibericus* in subgen. *Ootetrastichus*) .... ***APROSTOCETUS*** (p. 86)

— Antenna: scape usually not swollen (sometimes broad but then flattened) but if as stongly swollen as in the above (two species of *Oomyzus*) then propodeum distinctly reticulate, body not pale-marked, marginal vein not longer than costal cell, setae of cercus subequal in length 17

17 Antenna: funicular segments two to four 1·6–2·5 times as long as broad. *Either* each funicular segment has compact subbasal whorls of very long dark setae which reach slightly beyond the tip of the segment *following* that which bears them (*anysis*-group), *or* the first funicular

segment is 1·6–2·0 times as long as broad and not or hardly shorter than the second segment. Body most often non-metallic, black or black and yellow; if body is black with a weak bluish tinge, then one seta of each cercus is at least 1·5 times the length of the next longest. Mid lobe of mesosocutum most often with 1 adnotaular seta on each side, occasionally 2 setae, rarely 3 ***CECIDOTETRASTICHUS**

— *Either* at least the fourth funicular segment (sometimes all the funicular segments) not or hardly longer than broad; *or* the flagellum lacks whorls of long dark setae or has relatively short setae, *and* the first funicular segment is quadrate to transverse. Body black with weak to strong metallic tints, not pale-marked. Setae of cercus either subequal in length, or the longest at most 1·3 times the length of the next longest. Mid lobe of mesoscutum with 2 to 4 adnotaular setae on each side .... ***OOMYZUS**

18 Antenna: each segment of funicle with a compact subbasal whorl of long dark setae; first and often second segments of clava with partial whorls of similar setae (Figs 70, 76, 78, 83, 85, 105–112, 460–541) 19

— Antenna: segments of funicle and clava without whorls of long dark setae 35

19 Scutellum (Fig. 34) with sublateral lines forming deep broad grooves which are margined externally and have some strong transverse costulae. Anterior margin of clypeus subtruncate, without distinct teeth. Forewing: submarginal vein usually with 2 dorsal setae, rarely 3; marginal vein not longer than costal cell. Body black, non-metallic. First segment of mid and hind tarsi slightly shorter than second .... **HOLCOTETRASTICHUS** (p. 23)

— Scutellum with sublateral lines relatively shallow, narrow, and without transverse costulae or with at most very fine ones, *except* in some *Sigmophora* and *Aceratoneuromyia*, in which the anterior margin of the clypeus is distinctly bidentate (as in all except a few of the following genera). Forewing: submarginal vein most often with 3 or more, less often 2, dorsal setae (if with 2 then body usually metallic); marginal vein often longer than costal cell 20

20 Mid lobe of mesoscutum with numerous setae scattered over its whole surface, and without a median line. Scutellum without submedian lines; anterior pair of setae before the middle. Propodeal callus usually with a longitudinal crest or carina running from just outside the spiracle to the hind corner of the propodeum. Vertex medially with a slight edge or transverse ridge. Thorax, and usually head, with slight to fairly strong metallic tints ***NESOLYNX**

— Mid lobe of mesoscutum in most species with setae confined to the sides, or leaving a broad median band bare; if with numerous setae scattered over the whole surface (some *Eutetrastichus*, a few *Aprostocetus*) then scutellum has submedian lines but the propodeal callus lacks longitudinal crest or carina. Vertex in most species without ridge, sometimes (*Sigmophora*) with transverse carinae, but then body non-metallic, yellow and black 21

21 Malar sulcus indicated but weak and superficial. Forewing (Fig. 53) with a decolourized spot delimiting the parastigma from the marginal vein. Antenna with the dark whorled setae of each funicular segment reaching only to the level of the tip of the segment *following* that which bears them. Hind ends of notauli (Fig. 18) intercept scutellum at or only very slightly outside the bases of the submedian scutellar lines; scapular flanges more broadly triangular .... ***PRONOTALIA**

— Malar sulcus distinct. Forewing in most species without a decolourized spot in the position mentioned. Dark whorled setae of funicle often relatively longer. Hind ends of notauli (Figs 91–93, 251–252) intercept scutellum distinctly outside the bases of the submedian scutellar lines, or else the latter are absent; scapular flanges usually very narrowly triangular or sublinear 22

22 Vertex (Fig. 37) with a transverse carina delimiting the vertex from the occiput and reaching or nearly reaching the eyes; sometimes with a second carina crossing the ocellar triangle. First segment of mid and hind tarsi from very lightly to somewhat shorter than second. Body non-metallic, either black, or more usually with yellow markings which may be extensive, the body sometimes wholly yellow. Malar sulcus in European (and some other) species with a subtriangular fovea below the eye. Genital armature (Figs 556, 557) very long, 8–14 times as long as broad .... **SIGMOPHORA** (p. 76)

— Vertex without transverse carinae (a transverse ridge sometimes caused by collapse of the head should not be mistaken for a true carina). The other characters not present in combination except in *Kolopterna*, which has first segment of mid and hind tarsi (Figs 38, 39) very much shorter than the second 23

23 First segment of mid and hind tarsi (Figs 38, 39) very much shorter than second. Malar sulcus

(Fig. 40) with a sublinear fovea below the eye. Body non-metallic, yellow and black. Genital armature very long as in *Sigmophora* .... ***KOLOPTERNA*** (p. 80)

— First segment of mid and hind tarsi usually at least as long as second, but if slightly shorter then malar sulcus not foveate and body with metallic tints. Genital armature nearly always less elongate (2·5–6·5 times as long as broad except in *Aprostocetus grylli* in which it is nearly 8 times) 24

24 Outer surface of hind coxae (Fig. 41) with a fine curved dorsal carina. Propodeum (Fig. 42) with a sharp arcuate paraspiracular carina on each side; surface between the two carinae with distinct, slightly raised reticulation. Body black with metallic tints. Antenna with 2 anelli ***ANAPROSTOCETUS*** (p. 84)

— Hind coxae without dorsal carina. Propodeum nearly always without, or with at most vague, paraspiracular carinae; if with sharper carinae, then body without metallic tints. Antennae with 2 or 3 anelli 25

25 Malar sulcus with a conspicuous subtriangular or oblong fovea just below the eye 26

— Malar sulcus nearly always without a fovea, rarely with a minute one 27

26 Pronotum, in exact dorsal view of thorax, conical and at least half as long as the mesoscutum, the latter normally without a median line (rarely a shallow rather broad channel). Body usually strongly metallic at least in part (in a few mainly yellow species metallic tints are restricted to dark areas, and if the body is wholly yellow metallic tints may be absent). Scutellum in most species about as long as broad and nearly or quite as long as the mesoscutum, with its anterior pair of setae at least slightly before the middle, and each seta about equidistant from submedian and sublateral lines, or nearer the latter. Forewing with stigmal vein short to very short; marginal vein 5·0–9·0 times as long as stigmal. Antennae (Figs 104–112): the whorled dark setae of each funicular segment reach at most to the tip of the segment following that which bears them except in one species where they reach a little beyond that; usually there is a very strong constriction, sometimes even a short peduncle, between the first and second segments of the clava. Propodeum medially slightly to much longer than dorsellum; callus usually with 3–5 setae, occasionally 2 ***NEOTRICHOPOROIDES*** (p. 55)

— Pronotum relatively short, at most slightly more than one-third as long as the mesoscutum, but usually less. Body most often black and non-metallic, or weakly bluish- to olive-tinged, occasionally brightly metallic; not yellow-marked except sometimes the gaster. Scutellum at least very slightly broader than long, usually shorter relative to the mesoscutum, its anterior pair of setae usually not before the middle, and always nearer to the submedian lines than to the sublateral lines. Forewing: stigmal vein usually relatively longer; marginal vein at most 5 times length of stigmal vein. Antenna: the dark whorled setae of each funicular segment almost always reach beyond the tip of the segment following that which bears them; first segment of clava usually broadly attached to the second, rarely separated from it by a strong constriction. Propodeum sometimes slightly shorter, at most a little longer, than the dorsellum; callus sometimes with only 2 setae 28

27 Pronotum, in exact dorsal view of thorax, conical and at least half as long as the mesoscutum, the latter without a median line. Propodeum in European species 2·0–2·2 times as long as dorsellum, with relatively strong, raised reticulation; callus with 3–5 setae. Scutellum as long as or slightly longer than broad, nearly or quite as long as mesoscutum. Scapulae rather shallowly, or only moderately excised posteriorly, scapular flanges broadly triangular. Antennae: funicular segments all 3–4 times as long as broad, subequal in length, or the first hardly shorter than the others; whorled setae of each funicular segment reach at most half-way along the segment *following* that which bears them. Body most often extensively or mainly yellow, dark parts metallic. In yellow-marked species the stigmal vein is very short, the marginal vein 8–9 times as long as the stigmal, whilst the antennal scape has a ventral plaque exending most of its length .... ***NEOTRICHOPOROIDES*** (p. 55)

— In most species the pronotum is relatively shorter, the scutellum distinctly shorter than the mesoscutum and at least slightly broader than long; but if approaching the above in these respects (chiefly some *Aprostocetus* subgen. *Ootetrastichus*) then scapulae deeply excised with flanges narrowly triangular to sublinear. Mid lobe of mesoscutum often with median line. Propodeum most often shorter relative to dorsellum. Antennae with first funicular segment nearly always less than 3 times as long as broad, if as much as 3 times then the whorled setae reach somewhat beyond the tip of the segment following that which bears them; funicular segments 2 to 4 often less than 3 times as long as broad. Body often without yellow markings, often non-metallic. Forewing with stigmal vein relatively longer; marginal vein at most 5·6 times length of stigmal. Ventral plaque of antennal scape often otherwise 28

28 Antennae: the dark whorled setae of each funicular segment reach only about half-way along the segment following that which bears them. Body metallic, not pale-marked except sometimes the gaster .... ***EUTETRASTICHUS**

— Antennae: the dark whorled setae of each funicular segment reach at least level with the tip of the segment following that which bears them. Body sometimes non-metallic, or pale-marked 29

29 Antennal scape: ventral plague or carina placed mainly or wholly in the upper half (Figs 482–486, 488–541) 31

— Antennal scape: ventral plaque or carina *either* extending most of the length of the scape; *or* placed about in the middle of scape *and* extending about equally into its upper and lower halves; *or* placed mainly or wholly in lower half of scape 30

30 Antennae: whorled setae of each funicular segment reach beyond the tip of the segment following that which bears them, except in a very few species which have the first funicular segment shorter than the others. Forewing: submarginal vein in most species with 3 or more dorsal setae .... ***APROSTOCETUS***(p. 86)

— Antennae: whorled setae of each funicular segment reach at most level with the tip of the segment following that which bears them; funicular segments subequal in length. Forewing: submarginal vein with only 2 dorsal setae (sometimes even 1 seta on one forewing). (Occasional aberrations of *vacuna*-group) .... ***CECIDOTETRASTICHUS**

31 Setae of vertex, or at least one seta on each side situated between lateral ocellus and eye, very long (length nearly or quite twice the diameter of an ocellus). Body black, non-metallic or weakly bronze-tinged. Thorax more or less depressed, at least slightly broader than high; submedian lines of scutellum usually absent or obsolescent, rarely distinct; mid lobe of mesoscutum without a median line 32

— Setae of vertex shorter, their length rarely even as great as the diameter of an ocellus. Body either black with or without metallic tints, or partly to mainly yellow or reddish. Thorax usually convex and not broader than high; submedian lines of scutellum present and usually distinct; mid lobe of mesoscutum often with a median line 33

32 Antenna (see Fig. 45): clava having the apical seta of its terminal spine about twice as long as the spine [check the other characters below, as the seta is sometimes broken off]; funicular segments not or only slightly longer than broad. Spiracles of penultimate segment of gaster dorsal in position, usually visible though sometimes partly covered by the edge of the preceding tergite .... ***ACERATONEUROMYIA**

— Antennal clava: apical seta of terminal spine at most slightly longer than the spine; at least funicular segments 2 to 4 distinctly, often much, longer than broad. Spiracles of penultimate segment of gaster invisible (*subplanus* and a few species of *fulvipes*–group only)
APROSTOCETUS(p. 86)

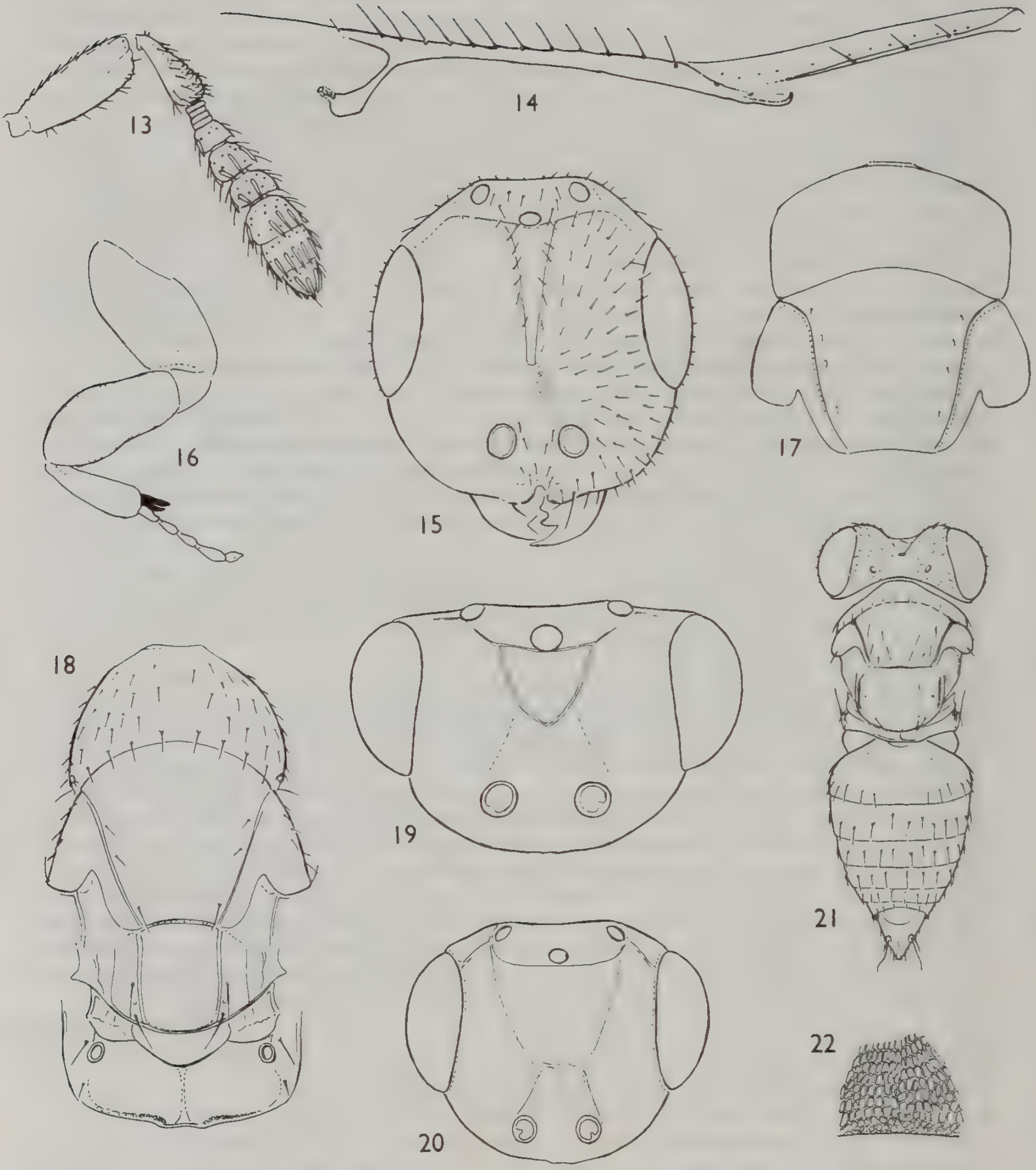
33 Forewing: submarginal vein with 2 dorsal setae which tend to lie rather close together near the middle; marginal vein becoming gradually thicker based. Head with fine striate-reticulate sculpture. Propodeum nearly twice as long as dorsellum, shiny and nearly smooth. Body black with weak, chiefly violet, metallic tints; gaster with pale subbasal spot
THRIPASTICHUS(p. 26)

— Forewing: submarginal vein most often with 3 or more dorsal setae. Sculpture of head reticulate without striae. The other characters usually different from above 34

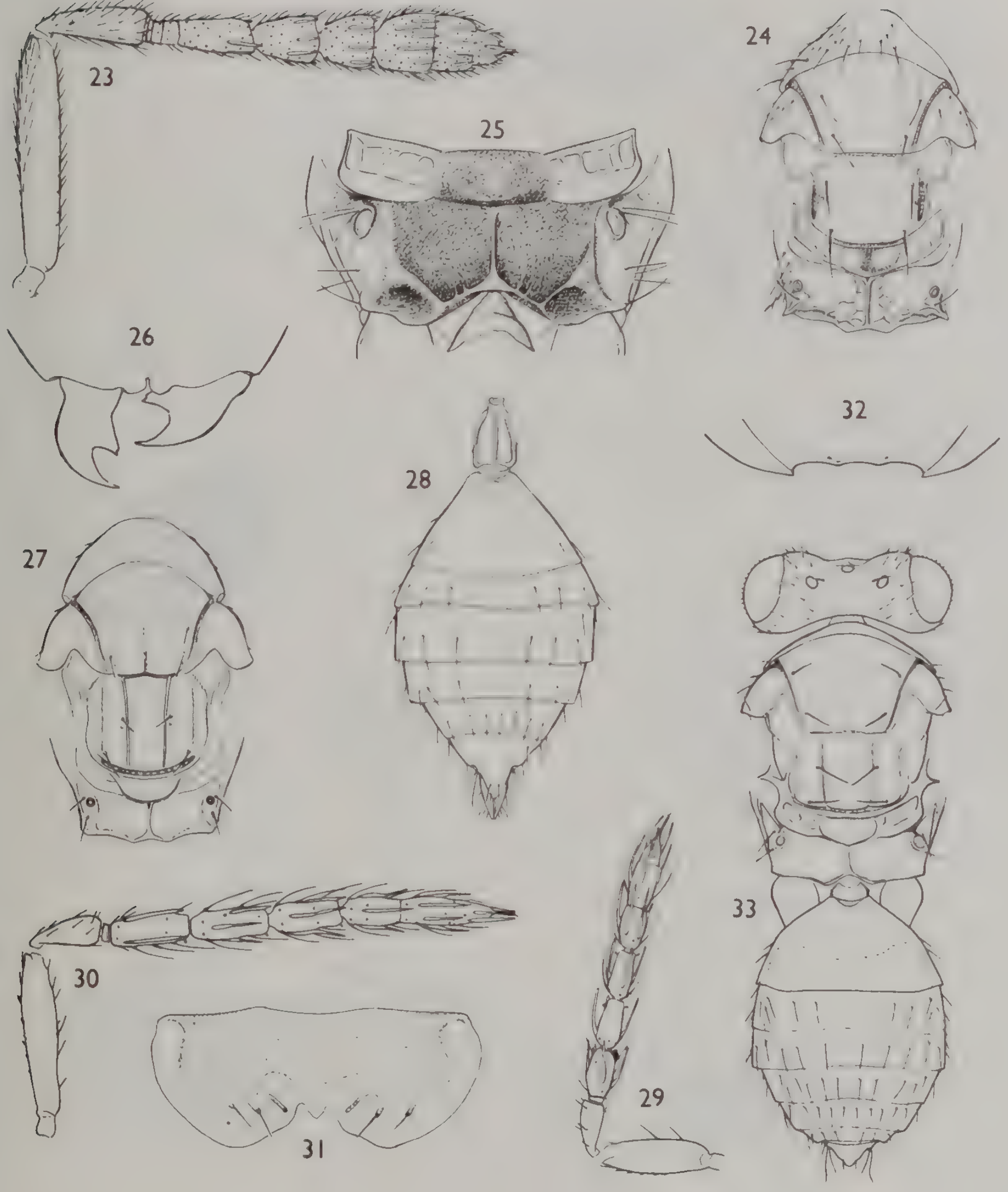
34 Spiracles of propodeum very small or minute, circular, their whole rim exposed. *Either* the propodeal spiracles are separated by at least their diameter from hind margin of metanotum; *or* the setae of each cercus are subequal in length, slightly curved or straight, pale, *and* the mesoscutum lacks a median line. Body at least partly metallic .... ***MINOTETRASTICHUS***(p. 49)

— Spiracles of propodeum usually moderate-sized, rarely small, usually suboval, with the outer part of their rim tending to be covered by a raised lobe of the callus; spiracles nearly always separated by half their major diameter or less from the hind margin of the metanotum, sometimes almost touching it. Most often one seta of each cercus is clearly longer than the others, often dark and kinked or sinuate in the middle. Mid lobe of mesoscutum often with a median line. Body metallic or non-metallic (many species of this genus)
APROSTOCETUS(p. 86)

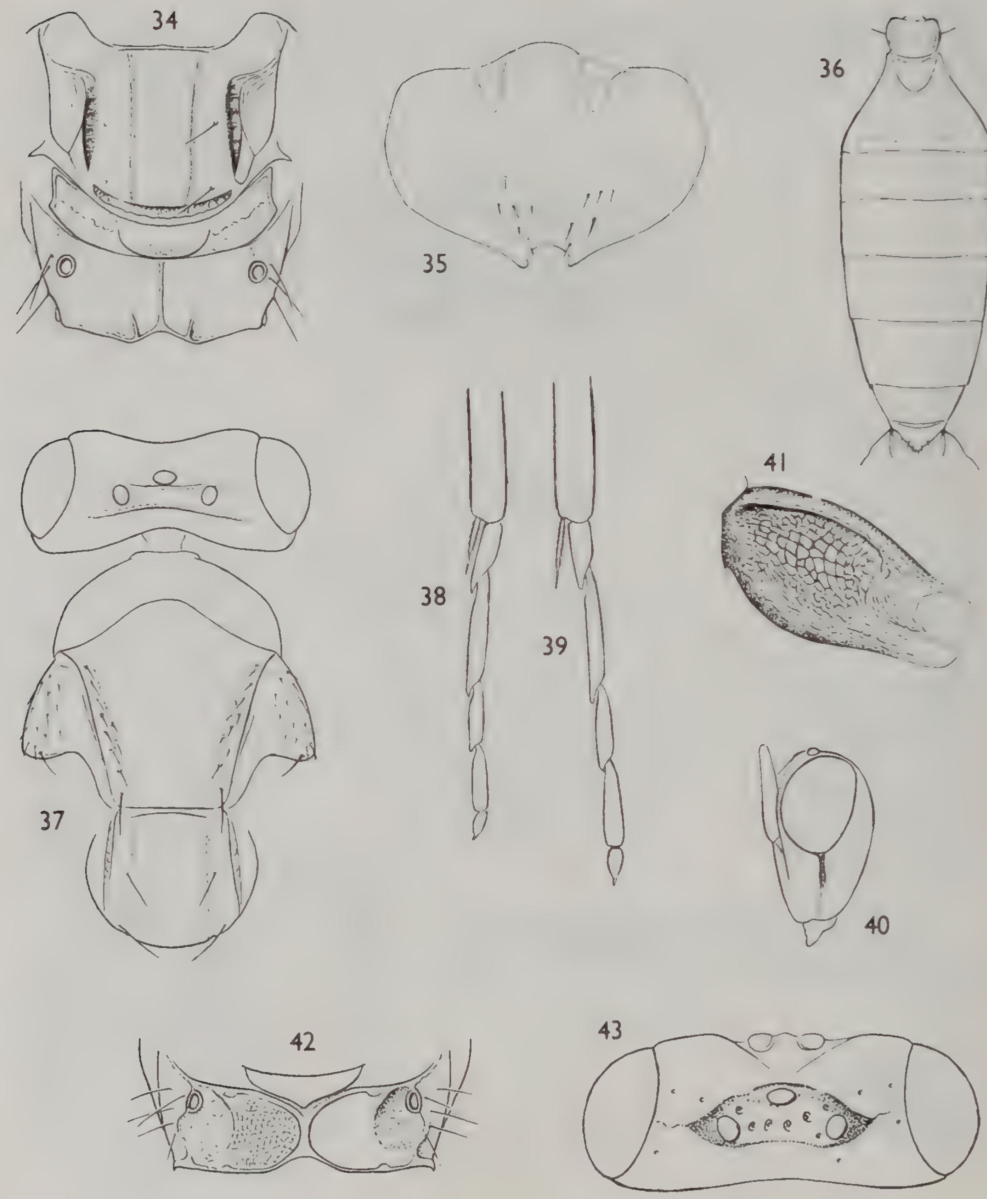
35 Mid lobe of mesoscutum with only 1 adnotaular seta on each side, placed in the posterior half. Submarginal vein with 2 dorsal setae (rarely one forewing with only a single seta). Body non-metallic, black or black with some yellow markings ...... ***CECIDOTETRASTICHUS**



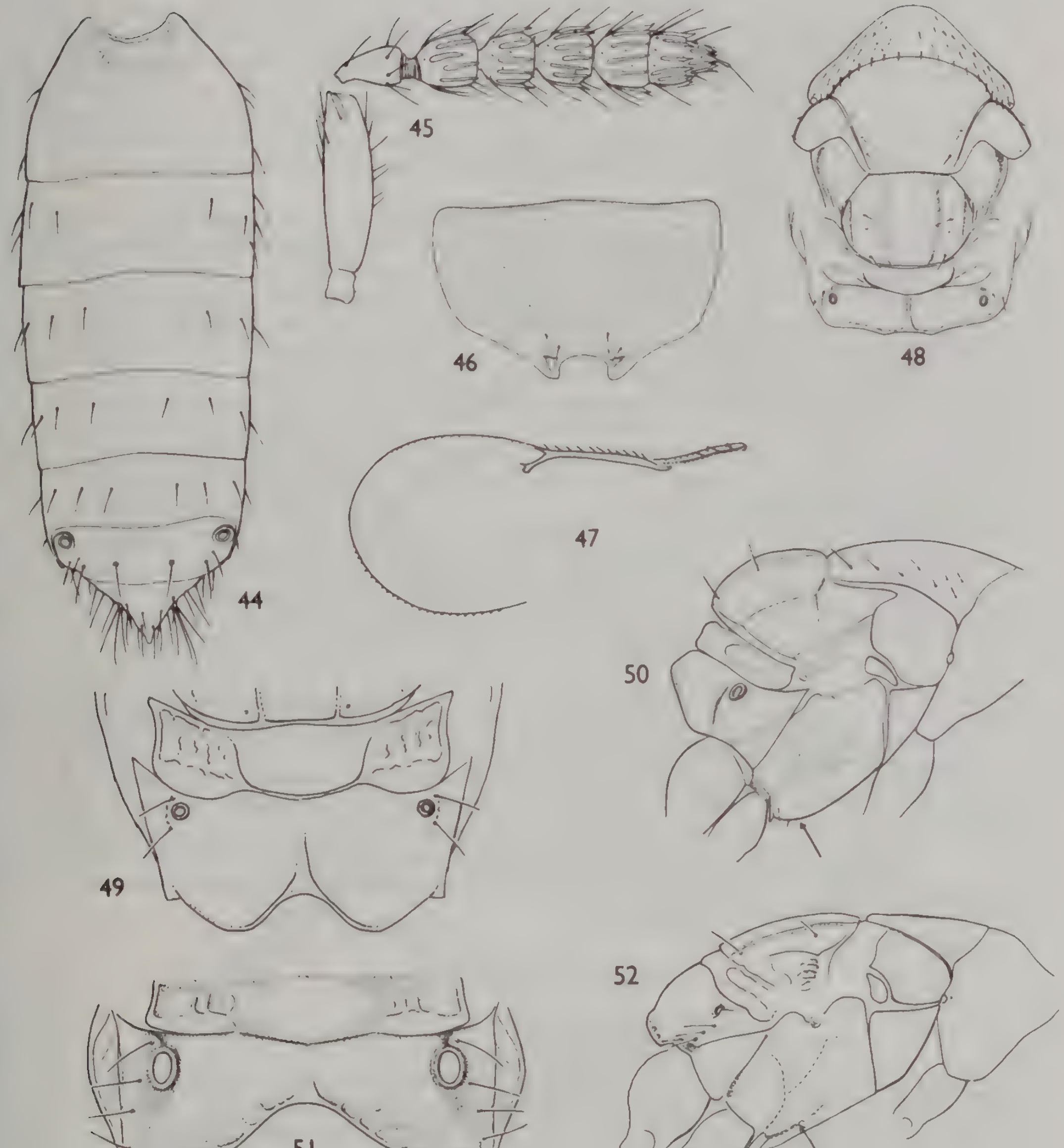
Figs 13–22 13, 14, *Quadrastichodella eucalypti* (Timberlake) ♀; (13) antenna; (14) forewing, anterior. 15, *Melittobia acasta* (Walker) ♀, head, frontal. 16, 17, *Crataepus marbis* (Walker) ♀; (16) fore leg; (17) pronotum and mesoscutum. 18, *Pronotalia carlinarum* (Szelényi & Erdös) ♀, thorax. 19, *Crataepus marbis* (Walker) ♀, head, frontal. 20, *Pronotalia carlinarum* (Szelényi & Erdös) ♀, head, frontal. 21, 22, *Sphenolepis pygmaea* Nees ♀; (21) body; (22) mesoscutum, sculpture.



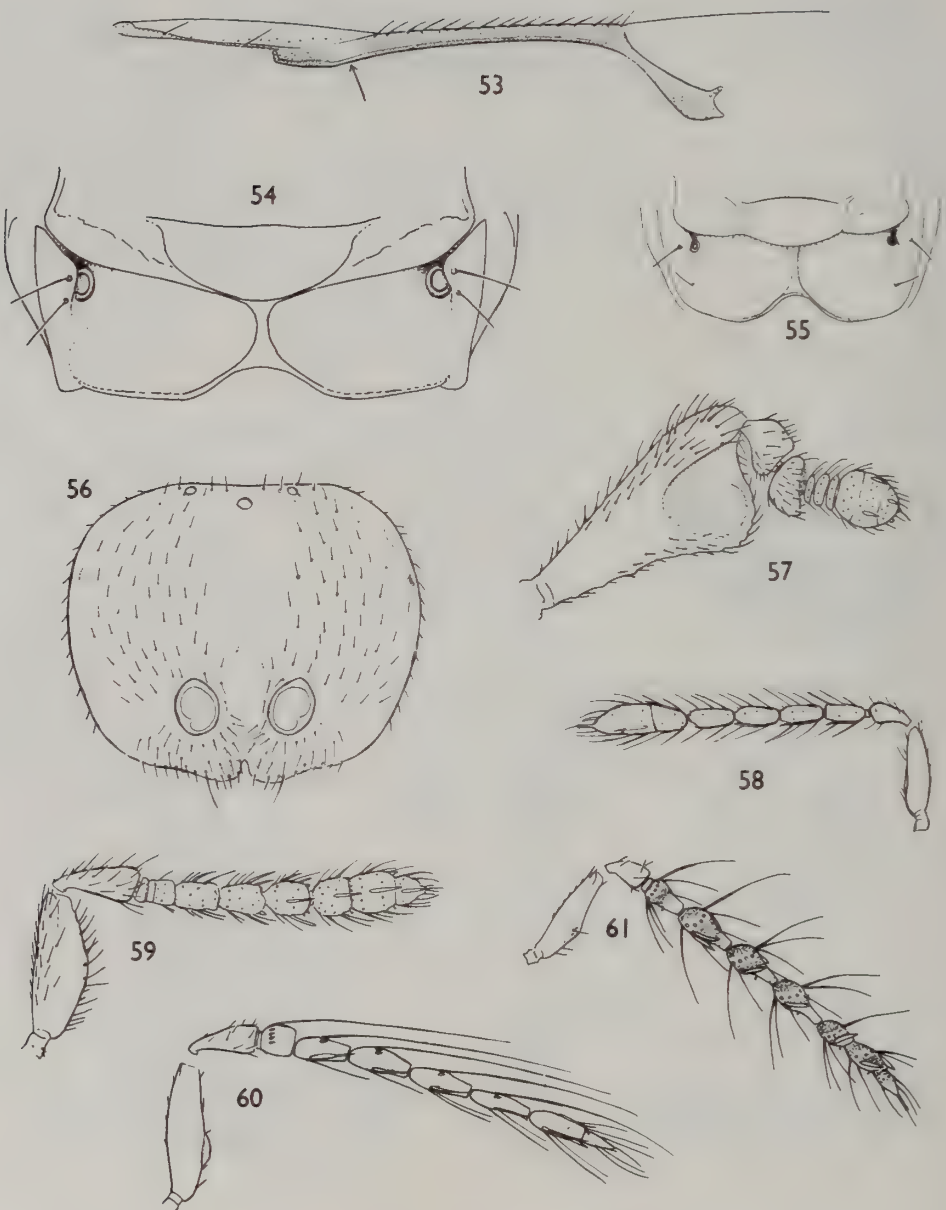
Figs 23–33 23, 24, *Tetrastichomyia clisiocampae* (Ashmead) ♀; (23) antenna; (24) thorax. 25, *Tetrastichus miser* (Nees) ♀, metanotum and propodeum. 26, *Chaenotetrastichus grangeri* (Erdös) ♀, clypeus and mandibles. 27–29, *Mischotetrastichus petiolatus* (Erdös) ♀: (27) thorax; (28) petiole and gaster; (29) antenna. 30, *Petalidion hellenicum* sp. n. ♀, antenna. 31–33, *Tamarixia pubescens* (Nees) ♀; (31) hypopygium; (32) clypeus; (33) body.



Figs 34–43 34, 35, *Holcotetrastichus rhosaces* (Walker) ♀: (34) scutellum, metanotum and propodeum; (35) hypopygium. 36, *Thripastichus gentilei* (Del Guercio) ♀, gaster. 37, *Sigmophora brevicornis* (Panzer) ♀, head, pronotum, mesoscutum and scutellum. 38, *Kolopterna quartensis* sp. n. ♀, mid tibia (distal) and tarsus. 39, 40, *K. salina* sp. n. ♀: (39) mid tibia (distal) and tarsus; (40) head, profile. 41–43, *Anaprostocetus acuminatus* (Ratzeburg) ♀; (41) hind coxa; (42) propodeum; (43) head, dorsal.



Figs 44–52 44, 45, *Aceratoneuromyia evanescens* (Ratzeburg) lectotype ♀; (44) gaster; (45) antenna. 46, *A. granularis* Domenichini ♀, hypopygium. 47, 48, *Xenaprostocetus pungens* sp. n. ♀: (47) forewing, part; (48) thorax. 49, *Minotetrastichus ecus* (Walker) ♀, metanotum and propodeum. 50, *Eutetrastichus endemus* (Walker) ♀, thorax, profile. 51, *E. adalia* (Walker) ♀, metanotum and propodeum. 52, *Neotrichoporoides mediterraneus* Graham ♀, thorax, profile; ps, precoxal suture.



Figs 53–61 53, *Eutetrastichus daira* (Walker) ♀, forewing, anterior. 54, *Aprostocetus aethiops* (Zetterstedt) ♀, metanotum and propodeum. 55, *A. cebennicus* sp. n. ♀, metanotum and propodeum. 56, 57, *Melittobia acasta* (Walker) ♂: (56) head, frontal; (57) antenna, 58, *Peckelachertus anglicus* Graham ♂, antenna. 59, *Tetrastichomyia clisiocampae* (Ashmead) ♂, antenna. 60, *Sphenolepis pygmaea* Nees ♂, antenna. 61, *Apotetrastichus postmarginalis* (Bouček) ♂, antenna.

— Mid lobe of mesoscutum with 2 or more adnotaular setae on each side. Submarginal vein nearly always with 2 or more dorsal setae, rarely (some *A. crino*) with 1 seta, in which case the body is metallic with yellow markings 36

36 Antenna with all funicular segments longer than broad, the first segment 2–8 times as long as broad, these segments subequal in length, or the first the longest .... ***APROSTOCETUS*** (p. 86)

— Antenna with at least the first funicular segment distinctly less than twice as long as broad, sometimes quadrate, often distinctly shorter than the second segment 37

37 Antennal scape strongly swollen and bladder-like, hardly 1·5 times as long as broad, yellow; flagellum clavate, proximally much more slender than the pedicellus, but thickening considerably distad; funicular segments only a little longer than broad. Propodeal spiracles very small, separated by more than their diameter from hind margin of metanotum ***MINOTETRASTICHUS*** (p. 49)

— Antennal scape nearly always at least twice as long as broad and flattened but not swollen; rarely swollen and slightly less than twice as long as broad, but then the funicle proximally is nearly or quite as stout as the pedicellus, whilst the propodeal spiracles are close to the metanotum (the spiracles are most often separated by slightly to much less than their major diameter from the metanotum, rarely by their diameter) 38

38 Antennae: at least the fourth funicular segment more or less transverse; none of the funicular segments longer than broad; flagellum very short, combined length of pedicellus and flagellum slightly less than or equal to breadth of mesoscutum, flagellum clavate or fusiform; clava only 1·3–2·0 times as long as broad. Thorax more or less, sometimes strongly, depressed dorsoventrally so as to be broader than high. Lower edge of antennal toruli usually a little below ventral edge of eyes. Forewing with a decolourized spot delimiting the parastigma from the marginal vein .... ****EUTETRASTICHUS***

— Antenna otherwise: usually at least some of the funicular segments longer than broad, rarely all quadrate, in which case the clava is at least 2·5 times as long as broad; flagellum usually filiform or nearly so, rarely very slightly clavate, usually relatively longer than in alternate. Thorax usually not depressed. Lower edge of antennal toruli not below ventral edge of eyes. Forewing (except in one species of *Eutetrastichus*) without decolourized spot in the position described 39

39 Setae of cercus subequal in length. Propodeal spiracles with the whole of their rim exposed. Body black with metallic tints, not pale-marked, except sometimes the gaster. Mid lobe of mesoscutum often with more than 5 adnotaular setae on each side, forming a single row or more than one row; median line usually distinct .... ****EUTETRASTICHUS***

— One seta of each cercus distinctly longer than the others. Propodeal spiracles with the outer part of their rim more or less covered by a raised lobe of the callus, especially if viewed from a little to one side. Mid lobe of mesoscutum with a single row of 2–5 adnotaular setae on each side; median line sometimes indistinct or absent (only a few species of the genus) ***APROSTOCETUS*** (p. 86)

APOTETRASTICHUS gen. n.

Type-species: *Tetrastichus postmarginalis* Bouček. Gender: masculine.

Foramen magnum situated slightly below middle of height of head. Vertex with strong, slightly raised reticulation. Frons with median longitudinal line or carina. Malar sulcus present. Anterior margin of clypeus truncate or (*lesbiacus*) with two small teeth. Mandibles tridentate. Lower edge of antennal toruli about level with ventral edge of eyes; antennal scape and pedicellus without coarse sculpture; anelli in ♀ *postmarginalis* (Fig. 687) 4, in *lesbiacus* (Fig. 688) 3, (those of *contractus* not investigated), in ♂ apparently fewer; funicle with 3 segments in ♀, 5 in ♂ of *postmarginalis* (males of other species unknown); clava with 3 segments in ♀, apparently 2 in ♂ (one segment constricted off and resembling a funicular segment); flagellar segments of ♂ with compact whorls of long dark setae. Pronotum short. Mid lobe of mesoscutum with median line, with a single row of adnotaular setae on each side. Scapulae with flanges narrowly wedge-shaped. Scutellum with submedian and sublateral lines, the latter neither deep nor broad; with 2 pairs of setae. Propodeum medially as long as or longer than dorsellum; median carina present, plicae absent; spiracles very small, circular, placed nearly midway between front and hind margins of propodeum, their whole rim exposed. Legs of medium length but rather slender. Forewing with costal cell as long as marginal vein; submarginal vein with 1 to 4 dorsal setae; marginal vein thin, at least 2·7 times as long as stigmal vein; postmarginal vein developed, almost or quite as long as stigmal. Gastral petiole subconical, transverse. Gaster of ♀ ovate, of ♂ oval or elliptic; setae of cerci subequal in length. Digitus of ♂ genitalia (Fig. 556) with 2 spines which are directed somewhat laterad. Body at least very weakly metallic.

DISTRIBUTION. Europe, Madeira.

COMMENTS. Differs from *Peckelachertus*, the only other European genus with a developed postmarginal vein, in having propodeal spiracles remote from hind edge of metanotum, scutellum with submedian lines and having the anterior pair of setae behind the middle; ♂ flagellum with whorls of long setae, with 5 funicular segments and 2-segmented clava, digitus with a different type of armature (Fig. 556). The developed postmarginal vein is a plesiomorphic character-state and *Apotetrastichus* does not appear to be related to *Peckelachertus*. It is perhaps near *Minotetrastichus* Kostjukov which it resembles in the propodeal spiracles, form of the clypeus and ♀ hypopygium; but it differs in the structure of the ♂ antennae and armature of the digitus. As the males of two species of *Apotetrastichus* are as yet unknown, however, it is unwise to speculate further on its relationships.

Key to Palaearctic species of *Apotetrastichus*

Females

1 Antenna (Fig. 62) with funicular segments longer, the first 1·8–2·0 times as long as broad and nearly or just as long as the pedicellus, the third segment 1·7–2·0 times as long as broad; clava as long as or slightly longer than the two preceding funicular segments together, its terminal spine about half the length of the third claval segment .... ***postmarginalis***(p. 46)

– Antenna (Figs 63, 64) with funicular segments quadrate or very slightly longer than broad, the first much shorter than the pedicellus; clava fully as long as, or longer than, the whole funicle, its terminal spine sometimes nearly or quite as long as the third claval segment.................... 2

2 Antenna (Fig. 64) with pedicellus about twice as long as the first funicular segment; flagellum strongly clavate; clava 2·6–2·7 times as long as broad. Submarginal vein of forewing with 4–5 dorsal setae; marginal vein with 11–12 setae on its front edge. Gaster black, or at most brownish proximally .... ***contractus***(p. 48)

– Antenna (Fig. 63) with pedicellus slightly to distinctly less than twice as long as the first funicular segment; flagellum less clavate; clava 2·8–3·0 times as long as broad. Submarginal vein with 2–3 dorsal setae; marginal vein with 7–8 setae on its front edge. Proximal half or more of gaster yellow .... ***lesbiacus***(p. 48)

Apotetrastichus postmarginalis (Bouček) **comb. n.**

(Figs 61, 62, 556, 662, 687)

Tetrastichus postmarginalis Bouček, 1969: 540–543; 1970: 93; 1977: 118; Kostjukov, 1978*b*: 434. Holotype ♀, YUGOSLAVIA: Spačva near Vinkovci, forest near R. Sava, 21.vi.1965 (*Bouček*) (NMP) [not examined].

This species (unless it is a complex, which seems unlikely) appears to vary considerably both in structure and colour. Therefore, although Bouček's description and figures are very good, some modifications in the description need to be made as a result of more extensive study. The following notes are intended to supplement the original description.

♀. Eyes nearly 1·3 times as long as broad. Malar space hardly 0·5 length of eye, sulcus curved. Mouth about 1·3 times malar space. Head not very shiny, with extremely fine, superficial reticulation, except on vertex and occipital surface where it is stronger and slightly raised. Antenna (Fig. 62) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum 1·15–1·30 breadth of mesoscutum; pedicellus nearly or just twice as long as broad, as long as or very slightly longer than F1; funicle proximally hardly stouter than pedicellus, hardly thickening distad; funicular segments subequal in length, F1 1·7–1·8 times, F2 1·7–2·0 times, F3 1·7–2·0 times as long as broad; clava slightly broader than funicle, 2·6–2·8 times as long as broad, as long as or slightly longer than F2 plus F3, pointed or acute, with C1 about as long as broad and occupying 0·35–0·40 of the length of the clava, C2 as long as or slightly longer than C1, C3 shorter, spine about 0·4 length of C3, with apical seta slightly shorter than spine; sensilla moderately numerous, uniseriate, moderately long, decumbent with tips projecting slightly. Thorax rather weakly arched, propodeal slope 30°–40°. Pronotum subconical, 0·3–0·4 as long as mesoscutum, with very fine though slightly raised, nearly isodiametric reticulation, except a strip along the hind margin behind a transverse row of short setae, where it is more shiny with finer and weaker sculpture. Mid lobe of mesoscutum slightly broader than long, moderately shiny with extremely fine superficial or almost engraved reticulation, areoles mostly 3–4 times as long as broad; median line usually absent, occasionally vaguely indicated in part; 2–3(–4) adnotaular setae on each side, the hindmost slightly shorter than scutellar setae. Scutellum slightly shorter than mesoscutum, about 1·2 times as broad as long, moderately convex, sculptured as mesoscutum but rather more finely; lines fairly distinct, submedians about equidistant from each other and from sublaterals, enclosed space 2·1–2·5 times as long as broad; setae equal in length, which is slightly less than distance between submedian lines, anterior pair in or very slightly before middle. Propodeum as long as or slightly longer than dorsellum; shiny, with fine and delicate superficial reticulation, areoles nearly isodiametric; median carina poorly defined anteriorly but fairly distinct caudad, broad, shiny; spiracles very small, circular, about twice their diameter from metanotum; callus usually with 2 setae near the spiracle, occasionally a third farther back, 4 according to Bouček. Legs of medium length but slender; hind coxae oblique, about twice as long as broad, shiny, with very fine subobsolete sculpture; hind femora nearly 4 times as long as broad; first segment of fore tarsus as long as second and about 3 times as long as broad; spur of mid tibia weak, 0·5 length of basitarsus; fourth tarsomere slightly shorter than basitarsus. Forewing nearly 2·5 times as long as broad; costal cell as long as or almost longer than *M*, 14–16 times as long as broad; *SM* usually with 1–3 (rarely 4) dorsal setae, when 1 or 2 these are placed before the middle; *M* not thick, 2·7–3·6 times length of *ST*, its front edge with 8–12 setae; *ST* nearly straight, at *ca* 45°, thin proximally but expanded after middle to form a small stigma which has a relatively long uncus; *PM* tapering, nearly or just equal to *ST*; speculum extremely narrow, or rudimentary, closed; wing beyond thickly to densely pilose, densely distad; cilia 0·4–0·5 length of *ST*. Hindwing acute; cilia nearly or about equal to breadth of wing. Gaster ovate, slightly longer than thorax, 1·7–2·3 times as long as broad, acute but not acuminate; last tergite slightly shorter than its basal breadth; tip of hypopygium placed slightly beyond half length of gaster. Hypopygium (Fig. 662).

Body black, with rather weak bluish or greenish blue tints on head and thorax; gaster in pale forms more or less testaceous to orange-yellow basally, sometimes as much as basal two-thirds. Antennae blackish, in pale forms with scape partly to wholly yellow or whitish, pedicellus sometimes pale beneath and apically. Legs in dark forms with coxae, femora apically, tibiae except bases and tips narrowly, black, the other parts yellowish to whitish; fore tarsi brownish, mid and hind tarsi yellowish gradually darkening to fuscous at tips. In paler forms, dark bands on femora and tibiae become reduced, and may be absent, whilst the tips of the coxae may be yellow. Tegulae black. Wings subhyaline or slightly grey, venation fuscous in dark forms, pale brown in paler forms. Length 0·7–1·2 mm.

♂. Antenna (Fig. 61) with scape broadest below middle, its ventral plaque 0·15–0·17 length of scape; pedicellus plus flagellum about twice breadth of mesoscutum; funicular segments subequal in length, or the first slightly shorter than the others, each with a swollen subglobose proximal portion which bears a whorl of long outstanding dark setae (these remain outstanding after death unlike those of most Tetrastichinae) and a narrow pale peduncle-like apical portion; clava not broader than funicle, slightly longer than F3 plus F4, with C1 separated from C2 by a strong constriction, C2 and C3 closely applied to each other, C1 and C2 each 1·6–1·8 times as long as broad, C3 about half as long as C2, spine very slender, nearly as long as C3 with apical seta nearly as long as the spine; sensilla sparse, those towards the lower edge of the funicular and first two claval segments strongly oblique. *M* with 5–8 setae on front edge; cilia 1·0–1·7 times length of *ST*. Hindwing very strongly acute. Gaster oval or elliptic, slightly shorter and narrower than thorax, obtuse, with ventral plica. Genitalia (Fig. 556).

Antennae fuscous to black, scape sometimes more or less whitish but the dorsal edge and plaque remain dark; constricted apical portions of funicular segments usually whitish, or at least slightly paler than the rest. Length 0·55–0·90 mm.

MATERIAL EXAMINED

17 ♂, 10 ♀. **Corsica**, **Czechoslovakia**, **France**, **Greece**, **Italy**, **Spain**, **Yugoslavia**.

HOSTS. 2 ♂, 2 ♀ were reared from young nymphs of an aphid (species not determinable) on *Taraxacum*, Corsica: San Giuliano, 28.iii.1970 (*F. Leclant*) (BMNH).

Apotetrastichus contractus (Walker) **comb. n.**

(Fig. 64)

Elachestus contractus Walker, 1872: 124. Lectotype ♀ (wrongly described as ♂), Madeira: Northern Deserta (*Wollaston*) (BMNH), designated by Graham (1979: 285) [examined].

Tetrastichus perpusillus Walker, 1872: 129. Lectotype ♀, Madeira (*Wollaston*) (BMNH), designated by Graham (1979: 285) [examined]. **Syn. n.**

♀. Head hardly as broad as mesoscutum, about 2·2 times as broad as long; temples 0·17 length of eyes, rounded off; POL nearly twice OOL, OOL about 1·5 times OD Head in front view subcircular with vertex moderately arched, genae slightly curved. Eyes about 1·3 times as long as broad, separated by slightly more than their length. Malar space half length of eye; sulcus moderately strongly curved, with a small, not well-defined fovea below eye. Vertex not very shiny, with only moderately fine, slightly raised, nearly isodiametric reticulation. Frons slightly more shiny, reticulation slightly finer; median carina present. Antenna (Fig. 64) with scape 0·8 length of eye, not quite reaching ocellus, broadest a little below middle; pedicellus plus flagellum 0·8 breadth of mesoscutum; pedicellus twice as long as broad and about twice length of F1; flagellum strongly clavate; funicular segments subequal in length, F1 and F2 subquadrate, F3 slightly transverse; clava 2·6–2·7 times as long as broad, strongly acute; terminal spine apparently about 0·2 length of C3, with apical seta as long as spine; sensilla of flagellum sparse; some setae rather long and somewhat outstanding. Thorax about 1·4 times as long as broad; propodeal slope about 40°. Pronotum about 0·25 as long as mesoscutum, its dorsal part with fine, slightly raised reticulation. Mid lobe of mesoscutum slightly broader than long, shiny, without median line; reticulation delicate, very fine, areoles 3–4 times as long as broad; 2 adnotaular setae on each side, the hindmost nearly as long as scutellar setae. Scutellum about 1·3 times as broad as long, moderately convex; sculpture as mesoscutum but finer; submedian lines equidistant from each other and from sublateral lines, or slightly near to each other, enclosed space about 2·5 times as long as broad; setae strong, dark, length slightly greater than distance between submedian lines. Dorsellum 3·5 times as broad as long, shiny. Propodeum about 2·5 times as long as dorsellum, shiny, with delicate superficial isodiametric reticulation which is wide-meshed near the median carina but finer laterally; median carina slightly raised, narrow in middle but broadening caudad, with a subtriangular basal fovea; spiracles very small, circular, at least 1·5 times their diameter from metanotum; callus with a moderately long seta outside the spiracle and a shorter seta farther back. Legs of medium length and thickness; hind coxae shiny, with very weak and fine, superficial reticulation, about twice as long as broad; length of mid tibial spur not measured. Forewing about 2·5 times as long as broad; costal cell about 16 times as long as broad; *SM* with 4–5 dorsal setae; *M* slightly shorter than costal cell, thin, 2·2 times length of *ST*, its front edge with 11–12 setae; *ST* at nearly 50°, slightly curved, thin proximally but expanding beyond half its length, equal to *PM*, speculum very small, not extending below *M*; disc moderately thickly pilose; cilia 0·6 length of *ST*. Hindwing strongly acute; cilia as long as wing breadth. Gaster ovate, about 1·7 times as long as broad, bluntly pointed, hardly as long as head plus thorax; last tergite very small, broader than long; ovipositor sheaths reach just level with tip of gaster; cerci wart-like, as high as broad.

Colour black, gaster tending to be paler proximally, with extremely weak bronze and violet tinge in places; antennal scape yellow, infuscate in basal half; pedicellus brownish, yellow beneath and at apex; flagellum yellowish; coxae and proximal two-thirds of femora black, legs otherwise yellowish testaceous with fourth tarsomere and pretarsus brownish; tegulae black; forewing subhyaline with weak infumation in middle, below *M*. Length about 1 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀ (lectotypes of *contractus* and *perpusillus*). **Madeira**.

HOST. Unknown.

Apotetrastichus lesbiacus **sp. n.**

(Figs 63, 661, 688)

♀. Differs from that of *contractus* by the characters noted in the key to species, also in having malar space about 0·4 length of eye, sulcus slightly curved and not foveate; mouth hardly 1·5 times malar space; clypeus with two small teeth; reticulation of vertex wider-meshed; *SM* with only 2–3 dorsal setae, disc of wing more sparsely pilose, cilia as long as *ST*; cilia of hindwing slightly longer than breadth of wing. Body black, with extremely faint violet tinge in places; petiole and about basal half of gaster yellow; antennal scape and pedicellus pale yellow, flagellum deeper yellow; coxae more or less darkened, legs otherwise pale yellow with fourth tarsomere and pretarsus slightly brownish; tegulae black; wings hyaline, venation very pale yellowish. Length 0·60–0·85 mm. Hypopygium (Fig. 661). Anelli (Fig. 688).

♂. Unknown.

MATERIAL EXAMINED

11 ♀. Holotype ♀, **Greece**: Lesvos, Vigla, 5 km WNW. of Andissa, 5.xi.1973 (*A. C. & W. N. Ellis*) (ITZ).

Paratypes. **Bulgaria**: 1 ♀, Sandanski, vi.1969 (*Kocourek*) (BMNH). **France**: Bouches du Rhône, Fonscolombe, 21.vi.1982 (*Graham*) (MVG). **Greece**: 8 ♀, same data as holotype (ITZ).

HOST. Unknown.

MINOTETRASTICHUS Kostjukov **stat. n.**

Tetrastichus Haliday subgen. *Minotetrastichus* Kostjukov, 1977: 190. Type-species: *Eulophus* [recte *Cirrospilus*] *ecus* Walker, 1838, by original designation.

DIAGNOSIS. Anterior margin of clypeus truncate or with a pair of low, rounded lobes. Propodeum (Fig. 49) with spiracles very small or minute, circular or nearly so, their whole rim exposed, usually separated from hind edge of metanotum by their own diameter or more, sometimes by slightly less. Antenna of ♀ usually with 2 or 3 anelli (Figs 690–692) but in *loxotoma* (Fig. 689) with 4, the first anellus subdiscoid, the others laminar; funicle and clava each with 3 segments. Antenna of ♂ either (*napomyzae*) with scape greatly swollen and flagellum lacking whorls of long dark setae; or with scape slender, its ventral plaque situated in upper half, and segments of flagellum with compact subbasal whorls of long dark setae. Mid lobe of mesoscutum usually without a median line. Body with at least a weak metallic tint though in some mainly yellow forms of *platanellus* metallic tints are lacking. The two longer setae of each cercus usually subequal in length, pale, straight or slightly curved (but in *loxotoma* and *prolongatus* one seta is about 1·6 times the length of the next longest; both these species have propodeal spiracles separated by at least their diameter from metanotum). Mesosternum convex. Other characters as in *Aprostocetus*.

HOSTS. Leaf-mining Lepidoptera, Coleoptera and Hymenoptera: Tenthredinidae, sometimes hyperparasitic on their braconid, ichneumonid or chalcidoid parasites.

DISTRIBUTION: Holarctic region.

COMMENTS. This genus is very close to *Aprostocetus* and *Eutetrastichus* but is distinguished from all the species of those genera by the combination of weakly lobed or truncate clypeus and very small subcircular propodeal spiracles, which are often more widely separated from metanotum. *Xenaprostocetus* is distinguished from *Minotetrastichus* by having one seta of each cercus twice the length of the next longest and kinked, also by the bare apical margin of the forewing and non-metallic body.

Keys to European species of *Minotetrastichus*

Females

1 Anterior margin of clypeus normally truncate, sometimes slightly waved, but without distinct teeth. Antenna (Fig. 65): clava with sutures between its first and second segments oblique, terminal spine nearly or quite as long as the third segment. Spiracles of propodeum separated by about 1·5 times their diameter from the hind margin of the metanotum. (Species-group of *loxotoma*) 2

– Anterior margin of clypeus slightly produced medially and forming 2 low curved lobes or teeth. Antenna (Figs 67–69): clava either with sutures not oblique, or the terminal spine much shorter (often both characters are present simultaneously). Spiracles of propodeum separated by at most slightly more than their diameter from hind margin of metanotum.......... 3

2 Malar sulcus not foveate. Mid lobe of mesoscutum with only 1 adnotaular seta on each side. Antenna (Fig. 65) black or dark brown; funicular segments distinctly longer than broad; clava

shorter than the funicle. Gaster black. Coxae black, femora infuscate. Length 1·25–1·60 mm. **loxotoma** (p. 50)

– Malar sulcus with fovea below the eye. Mid lobe of mesoscutum with 2–3 adnotaular setae on each side. Antenna with flagellum yellowish brown to yellow; funicular segments quadrate to slightly longer than broad; clava as long as the funicle. Gaster yellow proximally. Legs yellow with at most the coxae black. Length 0·8–1·1 mm .... **napomyzae** (p. 51)

3 Antenna (Fig. 67): clava with terminal spine as long as third segment. Body black with a very weak bronze tinge; femora infuscate. (Species sola) .... **prolongatus** (p. 51)

– Antenna (Figs 68, 69): clava with terminal spine much shorter than third segment. Body black with distinct green to blue-green or bronze-green metallic tints, usually more or less yellow-marked; femora yellow. (Species-group of *ecus*) 4

4 Forewing 2·15–2·35 times as long as broad; marginal vein 3·15–3·70 times length of stigmal vein. Thorax 1·7–1·8 times as long as broad. Propodeal spiracles separated by slightly more than their diameter from hind edge of metanotum .... **treron** (p. 55)

– Forewing 1·85–2·00 times as long as broad; marginal vein 2·6–3·1 times length of stigmal vein. Thorax 1·5–1·6 times as long as broad. Propodeal spiracles separated by 0·5–0·9 their diameter from hind edge of metanotum 5

5 Forewing 1·85–1·90 times as long as broad, its apical margin tending to be slightly obliquely truncate. Body less extensively yellow-marked, in dark forms with only mouth edge and upper angle of mesopleuron yellow .... **ecus** (p. 52)

– Forewing 1·9–2·0 times as long as broad, its apical margin tending to be more evenly rounded. Body extensively to mainly yellow .... **platanellus** (p. 54)

Males

Males of *loxotoma* and *prolongatus* are unknown.

1 Antenna with scape greatly swollen, only about 1·5 times as long as broad, without distinct ventral plaque; pedicellus longer than combined length of funicular segments 1 and 2; flagellum proximally much more slender than the pedicellus, but thickening greatly distad. Malar sulcus with a fovea just below the eye .... **napomyzae** (p. 51)

– Antenna (Fig. 70) with scape slender, 2·7–2·8 times as long as broad, with a short ventral plaque in the upper half; pedicellus at most slightly longer than the first funicular segment; funicle proximally as stout as the pedicellus, not thickening distad 2

2 Propodeal spiracles separated by fully their diameter from hind edge of metanotum. Forewing 2·20–2·35 times as long as broad; marginal vein 3·4–3·7 times length of stigmal vein .. **treron** (p. 55)

– Propodeal spiracles separated by somewhat less than their diameter from hind edge of metanotum. Forewing 1·9–2·0 times as long as broad; marginal vein 2·9–3·5 times length of stigmal vein .... **ecus** (p. 52), **platanellus** (p. 54)

The *loxotoma*-group

Minotetrastichus loxotoma (Graham) comb. n.

(Figs 65, 66, 663, 689)

Aprostocetus loxotoma Graham, 1961*b*: 21–23. Holotype ♀, GREAT BRITAIN: Buckinghamshire, Hell Coppice, near Oakley, 16.viii.1958 (*Graham*) (UM) [examined].
Tetrastichus loxotoma (Graham) Domenichini, 1966*a*: 134; 1966*b*: 38; Kostjukov, 1978*b*: 453.

♀. The original description was detailed and no additions are needed. Antenna (Fig. 65), forewing (Fig. 66), hypopygium (Fig. 663). Anelli (Fig. 689).

♂. Unknown.

MATERIAL EXAMINED

7 ♀. **Czechoslovakia**: 1 ♀, Slovakia, Slovenský Raj, Biela Voda, 29.vii,1965 (*Bouček*) (BMNH). **Great Britain**: 4 ♀ (see Graham, 1961*b*) (UM; MVG). **Norway**: 1 ♀, Kaupanger, 27.vii.1979 (*S. Compton*) (HUE). **Yugoslavia**: 1 ♀, Zagreb, Gračani, 20.vi.1965 (*Bouček*) (BMNH). Domenichini (1966*b*: 38) also listed Hungary, but I have not seen his material.

HOSTS. Domenichini (1966*b*: 38) gives 'Unidentified midge species (DIPT. Cecidomyiidae) on flowers of *Artemisia vulgaris*' [material not examined].

Minotetrastichus napomyzae (Domenichini) **comb. n.**

Tetrastichus napomyzae Domenichini, 1966*a*: 132–134; Viggiani, 1967: 157, Figs 1–3. Holotype ♀, ITALY: Campania, reared v–vi from *Napomyza lonicerella* Hendel (*Viggiani*) [not examined].

♂, ♀. Described in detail by Domenichini (1966*a*). Viggiani (1967) published good figures of the male and female antennae, and the forewing, drawn from paratypes.

HOST. *Phytomyza aprilina* Goureau on *Lonicera implexa*. Domenichini (1966*a*: 133–134) originally recorded the host as *Napomyza lonicerella* Hendel; this species has been shown by Spencer (1972: 67, 97) to belong to *Phytomyza* and to be a synonym of *P. aprilina* Goureau.

The *prolongatus*-group

Minotetrastichus prolongatus sp. n.

(Fig. 67)

♀. Head (very slightly collapsed) a little broader than mesoscutum, about 2·5 times as broad as long, with temples 0·15 length of eyes; POL 2·75 OOL, OOL 1·4 OD. Eyes about 1·4 times as long as broad, with extremely short sparse pubescence. Malar space 0·65 length of eye, sulcus moderately curved, not foveate. Mouth slightly greater than malar space. Anterior margin of clypeus distinctly bidentate. Head in front view subcircular, slightly broader than high, with vertex moderately arched, genae converging moderately and distinctly curved. Foramen magnum situated a little below middle of head height. Vertex moderately shiny, with very fine superficial reticulation. Longest setae of vertex slightly shorter than OD. Antenna (Fig. 67) with scape about 0·8 length of eye, reaching lower edge of median ocellus; pedicellus plus flagellum 1·35 times breadth of mesoscutum; pedicellus 1·5 times as long as broad, virtually as long as F1; funicle hardly stouter than pedicellus, filiform, its segments equal in length, each about 1·6 times as long as broad; clava not broader than F3, about 3·6 times as long as broad, distinctly longer than F2 plus F3, acute, C1 slightly longer than broad and separated from C2 by a rather deep suture, C2 quadrate, C3 shorter than C2, spine as long as C3, with two setae near its base; sensilla moderately numerous, long, uniseriate, subdecumbent. Thorax 1·45 times as long as broad; propodeal slope 35°–40°. Pronotum subconical, 0·4 length of mesoscutum, with fine, superficial or hardly raised, nearly isodiametric reticulation; a row of 8 only moderately long setae near hind margin. Mid lobe of mesoscutum 1·4 times as broad as long, shiny, with extremely fine engraved reticulation having most areoles 2·5–3·0 times as long as broad, a few in posterior part somewhat less; median line very fine but traceable in some lights; 2 adnotaular setae on each side, the anterior seta short, the posterior nearly as long as scutellar setae. Scutellum 1·5 times as broad as long, moderately convex in longitudinal axis, shiny, with sculpture like that of mesoscutum but finer, with more elongate areoles; submedian lines distinctly nearer to sublateral lines than to each other, wide apart anteriorly but converging caudad, enclosing a space about 1·7 times as long as broad; setae equal, length distinctly less than distance between submedian lines, anterior pair very slightly behind the middle. Dorsellum about 2·6 times as broad as long, shiny, with strongly curved hind edge. Propodeum narrowly and shallowly emarginate, medially almost as long as dorsellum; moderately shiny, with moderately fine isodiametric engraved reticulation; median carina slightly raised, thin and not foveate basally, expanding posteriorly beyond half its length; spiracles very small, circular, separated by fully their diameter from metanotum and by about 1·5 times their diameter from hind edge of propodeum; callus with 2 setae. Legs of medium length and thickness; hind coxae oblique, shiny, weakly sculptured; hind femora 3·4 times as long as broad; spur of mid tibia 0·78 length of basitarsus, fourth segment of mid and hind tarsi as long as basitarsus. Forewing about 2·2 times as long as broad, reaching well beyond tip of gaster, with apical margin nearly evenly rounded; costal cell hardly shorter than *M*, 14 times as long as broad; *SM* with 4 dorsal setae; *M* not thin, 3 times length of *ST*, its front edge with 12 setae; *ST* nearly straight, at about 50°, very thin and only expanded apically to form a small subcircular stigma having a moderately long uncus; *PM* a distinct stub, on the right forewing nearly half as long as *ST*; speculum narrow but extended a little way below *M*, closed below; wing beyond moderately thickly pilose, hardly more thickly distad; cilia of apical margin about 0·6 length of *ST*. Hindwing slightly pointed, cilia 0·35 breadth of wing. Gaster ovate-elliptic, somewhat longer than thorax, 1·65 times as long as broad, as broad as thorax, slightly acute but not acuminate; last tergite nearly twice as broad as long; ovipositor sheaths hardly projecting; longest seta of each cercus about 1·6 length of next longest, curved; tip of hypopygium at about half length of gaster.

Body black, mainly non-metallic, with extremely weak bronze tinge in places. Antennal scape and pedicellus fuscous, flagellum brown. Coxae black, trochanters partly fuscous, femora blackish with tips testaceous; tibiae and tarsi testaceous, with pretarsi and fourth segment of hind tarsi brownish. Tegulae black. Wings hyaline, venation greyish testaceous. Length 1·1 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **West Germany**: Bayern, Oberstdorf, ii.1977, on *Picea abies* (*B. Nübel*) (ITZ).

HOST. Unknown.

The *ecus*-group

Minotetrastichus ecus (Walker) comb. n.

(Figs 49, 68, 555, 665, 690)

Cirrospilus Ecus Walker, 1838: 204. Lectotype ♀, GREAT BRITAIN; near London (BMNH), designated by Graham (1961*a*: 48) [examined].

Eulophus cyclogaster Ratzeburg, 1844: 167. Holotype ♀, GERMANY: from *Orchestes* (*Nördlinger*) (*destroyed*).

Eulophus xanthops Ratzeburg, 1844: 170. Holotype ♀, GERMANY: from *Orchestes fagi* (*Nördlinger*) (destroyed).

Entedon rivillellae Rondani, 1877: 291. Lectotype ♀, ITALY (Mus. La Specola, Florence), designated by Bouček (1974: 264) [examined]. [Synonymized with *Tetrastichus ecus* (Walker) by Bouček (1974: 264.]

Tetrastichus cyclogaster (Ratzeburg) Thomson, 1878: 285.

Geniocerus ecus (Walker) Kurdjumov, 1913: 248.

[*Tetrastichus aurantiacus* (Ratzeburg) Kurdjumov, 1913: 248. Misidentification.]

Tetrastichus xanthops (Ratzeburg) Berry, 1938: 859; Dowden, 1941: 32; Burks, 1943: 577; Erdös, 1954: 355.

Geniocerus budensis Erdös, 1954: 355. LECTOTYPE ♀, HUNGARY: Buda mountains (TM), here designated [examined]. [Synonymized with *ecus* by Domenichini, 1966*b*: 28.]

Tetrastichus xanthops (Ratzeburg) Peck, 1963: 156.

Aprostocetus ecus (Walker) Graham, 1961*a*: 48.

Tetrastichus ecus (Walker) Domenichini, 1966*a*: 130; 1966*b*: 28; Bouček, 1977: 116; Kostjukov, 1978*b*: 454; Burks, 1979: 994.

Tetrastichus cimbicis Kostjukov, 1976: 89–92. Holotype ♀, U.S.S.R.: Altai, Kūndūndilsk district, 14.vi.1974 (*I. T. Filatova*) (ZI). [not examined]. **Syn. n.**

♀. Head slightly narrower than or only just as broad as the mesoscutum, 2.3–2.4 times as broad as long; temples almost nil. Eyes 1.30–1.35 times as long as broad, separated by about their own length, rather thickly clothed with very short pubescence. Malar space about 0·55 length of eye, sulcus rather strongly curved. Mouth only slightly greater than malar space. Anterior margin of clypeus with two low, broadly rounded teeth. Vertex with numerous fine setae the length of which is slightly less than OD. Antenna (Fig. 68) with scape distinctly shorter than eye but reaching median ocellus; pedicellus plus flagellum 1·2–1·3 times breadth of mesoscutum; pedicellus slightly less than twice as long as broad, usually somewhat shorter than F1, though in small ♀ hardly shorter; anelli (Fig. 690); funicle proximally a little stouter than pedicellus, hardly thickening distad, its segments subequal in length, F1 1·7–2·0 times, F2 1·8–2·0 times, F3 1·6–1·8 times as long as broad; clava very slightly broader than F3, distinctly longer than F2 plus F3, 3·1–3·8 times as long as broad, acutely pointed, with C1 and C2 not or hardly longer than broad, spine slender and about 0·5 length of C3, its apical seta about 0·6 length of spine; sensilla rather sparse, irregularly uniseriate, moderately long, slender, decumbent or subdecumbent; F2 and F3, and segments of clava, with a subbasal whorl of fine curved setae which are nearly as long as the segments themselves, and which stand out somewhat, also some shorter setae; F1 with relatively short setae. Thorax 1·5–1·6 times as long as broad, tending to be slightly broader than high; propodeal slope about 45°. Pronotum short, crescentic, bare except for a row of moderately long setae near hind margin and several shorter ones at the sides. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately convex, moderately shiny, with extremely fine superficial reticulation with areoles mostly rather short (1–2 times as long as broad); median line absent; 3–4 adnotaular setae on each side, the hindmost slightly shorter than scutellar setae, often a partial second row of 1–2 short setae mesad of the first row. Scutellum nearly 1·5 times as broad as long, moderately strongly convex, sculptured like mesoscutum but more finely; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length nearly or quite equal to distance between submedian lines, anterior pair in or slightly behind the middle. Dorsellum 2·2–2·7 times as broad as long, hind margin curved. Propodeum narrowly and shallowly emarginate, medially fully as long as, or slightly longer than, the dorsellum, its sides converging somewhat caudad, rather shiny, with fine superficial or almost raised, nearly isodiametric reticulation; median carina hardly raised, in the front half often represented only by a shiny smoother strip; spiracles (Fig. 49) very small, circular, separated by 0·5–0·9 their diameter from metanotum; callus with 2 setae, one just outside the spiracle and the other farther back. Legs of medium length, rather slender, especially tibiae and tarsi; hind coxae oblique, about twice as long as broad, shiny, with extremely fine delicately engraved reticulation; hind femora about 4 times as long as broad; spur of mid tibia about 0·66 length of basitarsus, fourth tarsomere of mid and hind tarsi shorter than basitarsus. Forewing 1·85–1·90 times as long as broad, apical margin slightly obliquely truncate, or nearly evenly rounded; costal cell hardly or only slightly shorter than *M*, 11–12 times as long as broad, with row of setae on lower surface often broken medially; *SM* with 2–4 (rarely 5) dorsal setae; *M* rather thin, 2·6–3·1 times length of *ST*, its front edge with 10–17 setae; *ST* at 40°–45°, very thin proximally and hardly expanding distad, stigma small and subrhomboidal, its lower outer corner tending to be pointed, uncus moderately long; *PM* a short stub or rudimentary; speculum small to very small, sometimes not extending below *M*, at other times extending as a narrow bare strip nearly to *ST*, closed below; wing beyond it rather thickly to quite thickly pilose, the pilosity becoming only a little denser towards apex of wing; cilia 0·3–0·5 length of *ST*. Hindwing pointed or (in small ♀) acute; cilia 0·3–0·5 breadth of wing. Gaster ovate, as long as or slightly longer than thorax, nearly or quite as broad as thorax, 1·5–2·0 times as long as broad, pointed but not acute; last tergite much shorter than its basal breadth; cercal setae subequal in length; ovipositor sheaths just reaching, or hardly projecting beyond, tip of last tergite; tip of hypopygium situated slightly to distinctly beyond middle. Hypopygium (Fig. 665).

Body black, or black with yellow markings; head and thorax, especially dorsally, with weak to strong metallic tints which vary from bronze through bronze-green, golden-green and green to blue; gaster (excepting any yellowish parts which may be present) bronze to purplish bronze, its apical segments and sometimes the base more or less green to blue. British and some other specimens are relatively dark, sometimes with only upper angle of mesopleuron yellow, though more often with mouth-edge and sutures of face yellowish; in others the whole face and orbits are yellow, whilst the gaster sometimes has an obscure testaceous subbasal spot. Some continental specimens have the head mainly yellow, or wholly so except the ocelli, and a transverse dark mark above the foramen magnum. A few continental females have sides of pronotum, prepectus, and hind part of scapulae yellow, more rarely the scapulae, except an anterior spot, the axillae except an anterior spot, the sides and posterior part of mid lobe of mesoscutum, and the sides or even the whole of the scutellum, become yellow. The basal half of the gaster is sometimes extensively to wholly testaceous or yellow, whilst in very pale specimens the gaster is yellow with transverse black bands on the posterior tergites. Antennal scape varying from fuscous with ventral edge yellowish, to yellow with the tip of the dorsal edge fuscous; pedicellus fuscous with lower surface and tip usually yellowish, in pale forms yellow with base brown; flagellum brown, testaceous or yellowish, tending to have the dorsal surface and articulations darker. Legs yellow, in dark forms with mid and hind coxae mainly to wholly dark, occasionally fore coxa dark at base; tips of tarsi brownish; rarely hind femur more or less infuscate dorsally. In pale forms sometimes all coxae are yellow and only the pretarsus of all legs is brownish. Tegulae yellow. Wings hyaline, venation yellow to testaceous. Length 0·9–1·8 mm.

♂. Antenna with scape about 0·85 length of eye, about 2·7 times as long as broad, hardly reaching median ocellus, with ventral plaque about 0·2 length of scape; pedicellus plus flagellum 1·7–1·9 times breadth of mesoscutum; pedicellus 1·5–1·6 times as long as broad, about as long as F1; funicle proximally somewhat stouter than pedicellus, tapering slightly distad; F1 hardly more than half as long as F2, quadrate or slightly transverse, following segments subequal in length, each twice or slightly more than twice as long as broad; clava hardly broader than F4, 5·0–5·5 times as long as broad, as long as or slightly longer than F3 plus F4, with C1 and C2 1·5–2·0 times as long as broad; whorled setae long, those of F1 reaching to tip of F3. Adnotaular setae tending to be fewer than in ♀, outer row sometimes with only 2 setae, inner row usually absent. Gaster oblong, about as long as but narrower than thorax, with a ventral plica. Genitalia (Fig. 555).

Body black with metallic tints; at least upper angle of mesopleuron yellow, sometimes mouth-edge and face, occasionally whole head except ocellar triangle and most of occipital surface, yellow. Gaster in dark forms black, but often with a pale or yellowish subbasal spot which varies from small and indistinct to quite large and conspicuous.

MATERIAL EXAMINED

9 ♂, many ♀. **Austria**, **Czechoslovakia**, **Denmark**, **Finland**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Italy**, **Netherlands**, **Norway**, **Sweden**, **Switzerland**, **U.S.S.R.**, **Yugoslavia**; **North America**.

HOSTS. Many species of leaf-mining Lepidoptera (especially *Phyllonorycter* spp.), Coleoptera (e.g., *Rhynchaenus* (=*Orchestes*) spp.), and Hymenoptera: Tenthredinidae, as gregarious, ectophagous parasite of their larvae; sometimes as a facultative secondary or tertiary parasite attacking other parasites of leaf-miners such as Braconidae and Chalcidoidea: Eulophidae. A more detailed list is given by Domenichini (1966*b*: 28).

COMMENTS. I am unable to distinguish *M. cimbicis* (Kostjukov) (*Tetrastichus cimbicis* Kostjukov, 1976) satisfactorily from *A. ecus*. The characters given for separating the two species by Kostjukov do not appear to be diagnostic. I have not seen the original material of *cimbicis*, but La Salle recently examined it and kindly informed me that he considered *cimbicis* to be conspecific with *ecus*.

Kurdjumov (1911: 144–145) described both sexes of a species *Tetrastichus mokrzeckii* which had been reared in the U.S.S.R. from pupae of *Euproctis chrysorrhea* L. Later (1913: 249) he synonymized *mokrzeckii* with *Geniocerus xanthops* (Ratzeburg) [= *Eulophus xanthops* Ratzeburg, 1844*b*: 170, ♀]. The original material of *xanthops* is destroyed but from Ratzeburg's description there is little doubt that it was the same as *ecus* (Walker) as accepted by recent authors. Kurdjumov's description of *mokrzeckii* includes the statements 'pedicel more long than the first funicle joint . . . pronotum very rugose covered with many bristles . . . posterior tarsi short.' If these statements were correct, then *mokrzeckii* could not have been the same as *ecus*, whilst the host cited points to the same conclusion. Kurdjumov also published in the same paper a figure of the ♂ antenna; this agrees fairly well with that of ♂ *ecus*, except for having the clava 2-segmented [3-segmented in *ecus*]. Recent authors have placed *mokrzeckii* as a synonym of *ecus* without further comnent but in view of the above facts this seems doubtful. Kurdjumov's syntypes of *mokrzeckii*, said to have been 'in the Museum of the Crimea at Simferopol', appear to be lost. His paper of 1911 is difficult to obtain and possibly has not been seen by previous workers.

Minotetrastichus platanellus (Mercet) **comb. n.**

Tetrastichodes platanellus Mercet, 1922: 396–399. Syntypes ♀, FRANCE: Menton (*R. Poutiers*) (not located).

Tetrastichus platanellus (Mercet) Poutiers, 1924: 79–84; Principi, 1953: 243–245; Ferrière, 1953: 402–404; Domenichini, 1966*a*: 131–132; 1966*b*: 45; Bouček, 1970: 93; Erdös, 1971: 226; Kostjukov, 1978*b*: 453.

Tetrastichodes populi Erdös, 1958: 222. LECTOTYPE ♀, HUNGARY; Baja, 29.viii.1946, from pupa of *Lithocolletis* (= *Phyllonorycter*) *populifoliellae* Treitschke (*Erdös*) (TM), here designated [examined]. **Syn. n.**

Aprostocetus platanellus (Mercet) Graham, 1961*a*: 49.

Tetrastichus populifoliellae Erdös, 1969: 45. [Unnecessary replacement name for *Tetrastichodes populi* Erdös, 1958.]

There are 4 ♀ syntypes of *Tetrastichodes populi* in the Erdös collection (TM). The first specimen in the series has been labelled and is here designated lectotype.

♀. Appears to differ from that of *ecus* only in the characters given in the key to females (couplet 5). The propodeal callus sometimes bears 3 setae. The forewing speculum tends to be slightly larger and is often extended as a bare wedge below *M* nearly or quite to level of *ST*; the wing beyond it is rather less thickly pilose.

Body extensively to mainly citron-yellow, with the following parts usually black with a metallic tint: a transverse bar on occipital surface above foramen magnum; often the ocellar traingle more or less; about middle third of pronotum; a large subcircular blotch on front half of mid lobe of mesoscutum; scutellum more or less, except sometimes sides outside sublateral lines; axillulae and metanotum mainly or wholly; propdeum and metapleuron, sometimes mesosternum more or less, occasionally lower part of mesopleuron; a broad transverse band on gaster occupying tergites 3 and 4, another bar on tergite 6, and the corresponding sternites often more or less infuscate. Antennal scape yellow with dorsal edge sometimes darkened; pedicellus brownish, yellow beneath and at tip; flagellum brownish or testaceous. Legs wholly yellow. Paler forms have the above dark markings reduced and the palest are yellow with only the metanotum mainly, propodeum, and a broad transverse bar just beyond middle of gaster, black.

♂. Not distinguished from that of *ecus*.

MATERIAL EXAMINED

2 ♂, 30 ♀. **Czechslovakia**, **France**, **Hungary**, **Italy**, **Yugoslavia**.

HOSTS. *Phyllonorycter blancardella* (F.), *P. cerasicolella* (H.–S.), *P. millierella* (Staudinger), *P. platani* (Staudinger) and (as facultative parasites) their parasites *Apanteles circumscriptus* Nees and *Sympesis sericeicornis* (Nees). *M. platanellus* is a solitary or gregarious parasite of the larvae and pupae of its hosts.

COMMENTS. It is difficult to be sure whether *M. platanellus* is specifically distinct from *ecus*, or a form of it. It is evidently more southern in its distribution. Further research is needed to clear up this problem.

Minotetrastichus treron sp. n.

(Figs 69, 70, 664)

♀. Differs from that of *ecus* in the characters given in the key to species (females). Also, the scutellar setae are slightly shorter; the spur of the mid tibia is only about 0·5 length of basitarsus. Forewing: *SM* with 3 dorsal setae; apical margin of wing evenly rounded. Antenna (Fig. 69); anelli (Fig. 692). Hypopygium (Fig. 664).

Body black with green metallic tint; usually the face at least partly, orbits, prepectus mainly, upper angle of mesopleuron, and about basal third of gaster, yellowish, sometimes also the hind margins of mid lobe of mesoscutum and of the scapulae. Legs yellow with hind coxae mainly black; fourth tarsomere of all legs brownish. Antennal scape and pedicellus yellowish, brown dorsally; flagellum testaceous to light brown, darker dorsally. Tegulae yellow. Wings tending to be slightly yellowish, venation testaceous to brownish. Length 0·9–1.1 mm.

♂. Antenna (Fig. 70) with scape fully as long as an eye, about 2·8 times as long as broad, with ventral plaque about 0·23 length of scape and placed just above the middle; pedicellus plus flagellum about twice breadth of mesoscutum; pedicellus very slightly longer than F1, 1·6 times as long as broad; funicle proximally distinctly stouter than pedicellus, tapering very slightly distad, F1 hardly half as long as F2 and quadrate, following segments subequal in length about twice as long as broad; clava a little broader than F4, about 4 times as long as broad, slightly longer than F3 plus F4, acute, with C1 and C2 subequal in length, each about 1·6 times as long as broad, C3 shorter; whorled setae long, those of F1 reaching about level with tip of F3. Forewing: *SM* with 2–3 dorsal setae. Gaster oval-elliptic, slightly shorter and a little narrower than thorax, with ventral plica.

Body black with green to blue-green tint, in the French specimens with face, orbits and upper angle of mesopleuron yellow, gaster with a testaceous subbasal transverse band; in the Yugoslavian male with head yellow, the ocellar triangle, middle of vertex and upper half of occipital surface dark, the posterior half of mid lobe of mesoscutum (prolonged as a narrow strip along each notaulus), posterior half of scapulae, prepectus and upper angle of mesopleuron yellow. Antennal scape yellowish, ventral plaque darker. Legs and wings as in female.

MATERIAL EXAMINED

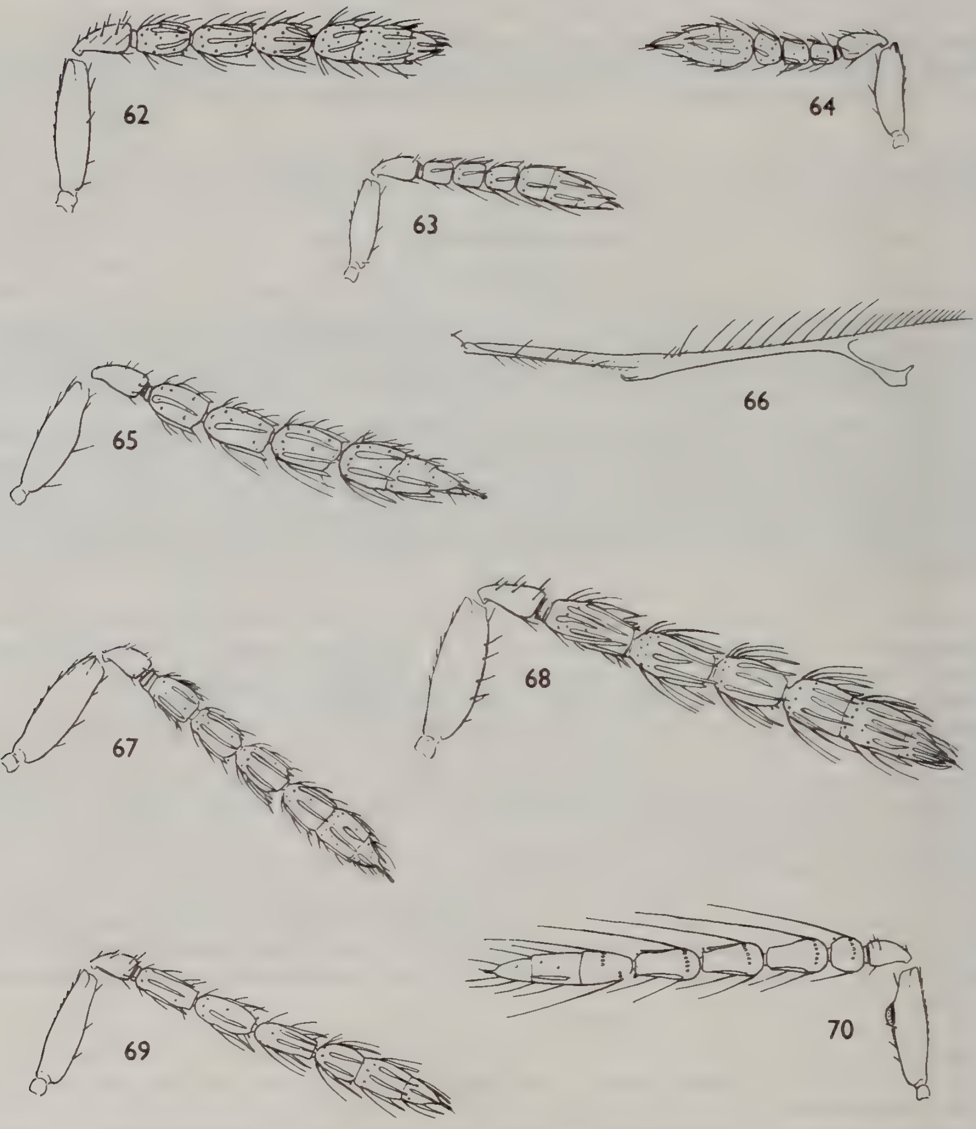
2 ♂ 5 ♀. Holotype ♀, **France**: Bouches du Rhône, Fonscolombe, near Puy Ste Réparade, 19.vii.1978 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, same locality as holotype, 18.vii.1979, 1 ♀, 17.vii.1981; 1 ♂, Bouches du Rhône, Bois de Valfère, near Rognes, 24.vii.1974; 1 ♀, Hérault, St Paul et Vamalles; 1 ♀, Causse du Larzac, near St Pierre de la Fage, 10.vii.1977 (Graham) (BMNH). **Yugoslavia**: 1 ♂, Biograd na Moru, 20.vii.1968 (*Bouček*) (BMNH).

NEOTRICHOPOROIDES Girault

Neotrichoporoides Girault, 1913*a*: 50. Type-species: *Neotrichoporoides uniguttata* Girault, by original designation and monotypy.

Trichaporoidella Girault, 1913*c*: 223. Type-species: *Trichaporoidella aenea* Girault, by original designation. **Syn. n.**



Figs 62–70 62, *Apotetrastichus postmarginalis* (Bouček) ♀, antenna. 63, *A. lesbiacus* sp. n. ♀, antenna. 64, *A. contractus* (Walker) ♀: 65, 66, *Minotetrastichus loxotoma* (Graham) ♀: (65) antenna; (66) forewing, anterior. 67, *M. prolongatus* sp. n. ♀, antenna. 68, *M. ecus* (Walker) ♀, antenna. 69, 70, *M. treron* sp. n.; (69) ♀, antenna; (70) ♂, antenna.

Aprostoceroloides Girault, 1913*c*: 243. Type-species: *Aprostoceroloides speciosus* Girault, by original designation. **Syn. n.**

Burksia Fullaway, 1955: 409. Type-species: *Burksia viridimaculata* Fullaway, by original designation and monotypy. **Syn. n.**

[*Tetrastichus* Haliday; Schulten & Feijen, 1983: 76–80; 1984: 57–61. Misidentifications.]

[*Neotrichaporoides* Girault; Dahms, 1986: 704. Invalid emendation.]

DIAGNOSIS. Thorax (Figs 91–93) with pronotum conical, at least about half as long as mesoscutum. Mid lobe of mesoscutum without a median line (occasionally a shallow and relatively broad longitudinal depression); scapulae less deeply excised posteriorly than in *Aprostocetus*, scapular flanges rather broadly triangular. Scutellum usually at least as long as broad and nearly or quite as long as mesoscutum, occasionally a little broader than long or distinctly shorter than mesoscutum; submedian lines usually distinct, occasionally weak or obsolescent; anterior pair of setae most often at least slightly in front of middle and equidistant from submedian and sublateral lines (Fig. 93) or nearer the latter, occasionally (Figs 91, 92) nearer to submedian lines. Propodeum medially at least very slightly, but often much, longer than dorsellum, sometimes strongly reticulate; callus with 3–7 setae. Forewing (Figs 86, 94) with costal cell narrow; *M* 5·5–9·5 times length of *ST*, the latter very short with stigma shortly petiolate to almost sessile. Antenna of ♀ with 4 discoid anelli; funicular segments usually moderately to strongly elongate, rarely short. Antenna of ♂ with ventral plaque of scape usually extending most of length of scape, occasionally short and placed mainly to wholly in upper or lower half, or in middle; segments of clava (especially C1) tending to be separated by strong constrictions; whorled dark setae of flagellum usually relatively shorter than in ♂ *Aprostocetus*. External surface of hind coxae sometimes strongly reticulate. Malar sulcus usually foveate below eye. Body usually with distinct metallic tints on dark parts, but some mainly or wholly yellow species lack metallic tints. Other features as in *Aprostocetus*.

HOSTS. Diptera: Muscidae and Diopsidae.

COMMENTS. This genus is a large one of wide distribution but appears to be especially rich in species in Africa, Asia and Australia.

In addition to the species treated here, the following also belong to *Neotrichoporoides*: *N. diopsisi* (Risbec, 1956) **comb. n.**, *N. confusus* (Schulten & Feijen, 1984) **comb. n.**, *N. variabilis* (Schulten & Feijen, 1984) **comb. n.**, *N. flavobrunneus* (Schulten & Feijen, 1984) **comb. n.**, *N. risbeci* (Schulten & Feijen, 1984) **comb. n.**; also several species described from Australia by Girault, in *Neotrichoporoides*, *Aprostoceroloides* and *Trichaporoidella*; and a number of undescribed species from Asia, Africa and Australia.

I prefer not to define species-groups at present, although I am acquainted with several. *N. viridimaculatus*, *N. dispersus* and some other species not treated here, appear to constitute one species-group; *N. intaminatus*, *N. nyemitawus*, *N. szelenyii*, *N. mediterraneus*, with a number of mostly undescribed African and Asian species, form another; whilst the remaining species included in the present paper may form a third group. Additional groups certainly exist.

Some non-European species have been included in my key to females because they have been confused with certain European species in collections and it is thought useful to draw attention to their distinguishing features.

Keys to European (and some other) species of *Neotrichoporoides*

Females

1 Yellow species with characteristic patterns of black, metallic-tinged markings (see Figs 88, 89) which tend to form broken longitudinal stripes. Forewing nearly 3 times as long as broad, with marginal vein 8·0–9·5 times length of stigmal vein; speculum closed below, basal vein pilose. Antenna (Fig. 87) with scape fully as long as or somewht longer than an eye and reaching above the vertex; first funicular segment at least twice as long as the pedicellus, about as long as the clava, and 4–5 times as long as broad.

Propodeum 1·5–2·0 times as long as dorsellum, its surface relatively dull with slightly raised reticulation. Malar sulcus with only a very small or minute fovea below the eye. Basitarsus of mid leg 1·1–1·2 length of second segment 2

— Species either not yellow-marked, or with quite different pattern. *Either* the marginal vein is shorter relative to the stigmal vein; *or* the antennal scape is shorter; *or* the propodeum is more shiny; *or* the malar sulcus has a larger fovea. First funicular segment rarely almost twice as long as the pedicellus, normally less, and mostly shorter than the clava 3

2 Body (Fig. 88) with less extensive black markings. Scutellum: submedian lines superficial but traceable throughout the length of the sclerite, or at least over the greater part of it; surface of sclerite rather less shiny, with more distinct reticulation which tends to be very slightly raised .... ***dispersus*** (p. 67)

— Body (Fig. 89) with more extensive black markings: in addition to those present in *dispersus*, there are usually other dark spots on the head, whilst at least the middle third or more of the pronotum, mid lobe of mesoscutum mainly, a broader stripe on the scutellum, propodeum except sometimes the anterolateral angles, and gaster except a large antemedian oval spot and markings on the penultimate and last tergites, are black with a metallic tint. Scutellum: submedian lines absent or, rarely, weakly indicated in part; surface of sclerite relatively shiny, with excessively fine engraved reticulation .... ***viridimaculatus*** (p. 67)

3 Propodeum (Fig. 91) twice or more than twice as long as dorsellum, dull, with distinctly raised reticulation. Externo-dorsal surface of hind coxae with strong, slightly raised reticulation. Mid lobe of mesoscutum usually with at least a second row of adnotaular setae on each side. Forewing usually with speculum mainly or wholly open below and basal vein usually bare. Basitarsus of mid leg 1·4–1.5 times length of second segment 4

— Propodeum (Figs 92, 93) less than twice as long as dorsellum, moderately to rather strongly shiny, with hardly raised reticulation. Hind coxae with delicate reticulation which is not raised above the general surface. Mid lobe of mesoscutum usually with only one row of adnotaular setae on each side. Forewing with speculum usually closed below, occasionally open at base; basal vein usually with 1 or more setae. Basitarsus of mid leg at most 1·3 times length of second segment (except *cynodontis*, in which it is about 1·4 times) 10

4 Antenna (Fig. 97) with first funicular segment at most 1·7 times as long as pedicellus; scape sometimes not reaching above the vertex 5

— Antenna with first funicular segment at least nearly twice as long as pedicellus; scape always reaching above the vertex 7

5 Forewing with speculum closed below, basal vein with 1–3 setae. Antennal scape reaching above the vertex. Small species, length 1·5–1·8 mm. (India) .... ***N.*** sp. 2

— Forewing with speculum open below; basal vein often bare. Antennal scape sometimes not reaching above the vertex. Species often larger 6

6 Base of gaster, head, sides of pronotum, prosternum and prepectus more or less extensively yellow. Genal fovea narrow, 2·0–2·5 times as long as broad. Antennal scape reaching slightly above the vertex. (India) .... ***N.*** sp. 3

— Gaster not pale at base; prosternum and prepectus in European specimens black, in Indian specimens more or less yellow. Genal fovea usually 1·4–1·8 times as long as broad, rarely 2·0 times. Antenna (Fig. 97) with scape not or hardly reaching above the vertex ***mediterraneus*** (p. 69)

7 Antenna (Fig. 96) with first funicular segment about twice as long as the pedicellus, usually at least slightly shorter than clava plus spine. Body length 2·3–2·7 mm. Gaster 2·0–2·7 times as long as broad 8

— Antenna (Fig. 95) with first funicular segment 2·2–2·4 times as long as the pedicellus, as long as or slightly longer than clava plus spine. Body length 2·8–3·3 mm. Gaster 2·4–3·4 times as long as broad 9

8 Antenna (Fig. 96) with combined length of pedicellus and flagellum 1·55–1·75 times breadth of mesoscutum. Gaster 2·3–2·4 (?–2·7) times as long as broad .... ***szelenyii*** (p. 68)

— Antenna with combined length of pedicellus and flagellum 1·8–1·9 times breadth of mesoscutum. Gaster about twice as long as broad .... ***intaminatus*** (p. 69)

9 Antenna (Fig. 95) with scape not quite as long as an eye. Lower half of head, and orbits, testaceous or yellow. Gaster 2·4–3·0 times as long as broad; last tergite 1·10–1·45 times as long as its basal breadth .... ***nyemitawus*** (p. 68)

— Antenna with scape as long as or very slightly longer than an eye. Head with only the mouth edge testaceous. Gaster 3·0–3·1 times as long as broad; last tergite 1·5–1·8 times as long as its basal breadth (some African forms would run here) .... ***N.*** spp.

10 Forewing (Fig. 94) with marginal vein about as long as the costal cell 11

— Forewing with marginal vein distinctly longer than the costal cell 13

11 Antenna with third funicular segment about 2·3 times as long as broad; combined length of pedicellus and flagellum about 1·6 times breadth of mesoscutum. Gaster hardly as long as head plus thorax, 1·6–1·7 times as long as broad. Basitarsus of mid leg 1·1–1·2 times as long as second segment .... ***brevicosta*** (p. 74)

— Antenna with third funicular segment 1·4–1·8 times as long as broad; combined length of pedicellus and flagellum 1·2–1·4 times breadth of mesoscutum. Gaster 1·75–2·20 times as long as broad. Basitarsus of mid leg 1·25–1·43 times as long as second segment 12

12 Gaster hardly as long as head plus thorax, about 1·8 times as long as broad. Antenna (Fig. 99) with third funicular segment about 1·5 times as long as broad. Basitarsus of fore leg about 2·6 times as long as broad and a little shorter than the second segment; basitarsus of mid leg about 1·25 times as long as second .... ***rossiliensis*** (p. 74)

— Gaster slightly longer than head plus thorax, about 2·2 times as long as broad. Antenna with third funicular segment about 1·8 times as long as broad. Basitarsus of fore leg about 3 times as long as broad and equal in length to second segment; basitarsus of mid leg about 1·4 times as long as second segment .... ***erroneus*** (p. 74)

13 Antenna (Fig. 101) with funicular segments decreasing rapidly in length, the third 1·1–1·5 times as long as broad; funicle proximally a little stouter than the pedicellus; combined length of pedicellus and flagellum 1·15–1·25 times breadth of mesoscutum. Body with some reddish markings. Submedian lines of scutellum very weak .... ***cynodontis*** (p. 73)

— Antenna with funicular segments decreasing less rapidly in length, the third at least twice as long as broad except in some *gordensis* in which the funicle proximally is not stouter than the pedicellus, and the body is usually extensively or nearly wholly testaceous. Submedian lines of scutellum distinct 14

14 Antenna (Fig. 100) with first funicular segment not or only slightly (up to 1·2 times) longer than the pedicellus, third segment 1·4–2·0 times as long as broad; funicle proximally not stouter than the pedicellus. Subcubital line of setae, on upper surface of forewing, ending somewhat distad of distal edge of speculum. Body usually mainly to almost wholly testaceous, in very dark forms with face partly, prosternum and marks on pronotum, and base of gaster, testaceous .... ***gordensis*** (p. 75)

— Antenna with first funicular segment 1·25–1·80 times as long as pedicellus, third segment 2·0–2·7 times as long as broad; funicle proximally slightly stouter than the pedicellus except in some *biogradensis* in which the subcubital line of setae on upper surface of forewing extends to level of distal edge of speculum, and body is dark with at most face, pronotum, prepectus, and base of gaster more or less reddish 15

15 Subcubital line of setae, on upper surface of forewing, ending well distad of distal edge of speculum. Malar fovea larger, nearly half malar space. Body extensively reddish; dorsellum yellow. Space enclosed by submedian lines of scutellum at most 2·6 times as long as broad. Antenna with first funicular segment as long as clava plus spine .... ***bulgaricus*** (p. 71)

— Subcubital line of setae of forewing ends at about level of distal edge of speculum, or only slightly distad of this (in *cavigena* extending nearly to level of basal vein). Malar fovea smaller except in *cavigena*, which has body wholly black with metallic tints, and space enclosed by submedian lines of scutellum 3·0–3·5 times as long as broad. Antenna with first funicular segment at least very slightly shorter than clava plus spine 16

16 Forewing with speculum absent or virtually so; subcubital line of setae extending to level of basal vein. Malar fovea very small. Otherwise resembles *cavigena* (India) .... ***N.*** sp.

— Forewing with speculum present, subcubital line of setae usually not reaching level of basal vein. Malar fovea larger 17

17 Malar fovea larger, extending about half length of malar space. Space enclosed by submedian lines of scutellum 3·0–3·5 times as long as broad, the submedian lines about equidistant from each other and from sublateral lines. Body not pale-marked; antennal scape black; femora at least broadly black proximally, tibiae sometimes more or less infuscate .... ***cavigena*** (p. 70)

— Malar fovea smaller, extending about 0·33 length of malar space. Space enclosed by submedian lines of scutellum 2·2–3·1 times as long as broad. Body sometimes pale-marked; scape pale, at least beneath or basally; femora and tibiae pale 18

18 Body including gaster wholly dark, except sometimes the mouth edge; antennal scape pale yellow with about upper half black. Submedian lines of scutellum about equidistant from each other and from sublateral lines, enclosing a space 2·8–3·1 times as long as broad. Basitarsus of hind tarsus not longer than second segment .... ***dubiosus*** (p. 72)

— Sides of pronotum, prosternum, prepectus, and upper angle of mesopleuron reddish to yellowish; antennal scape reddish yellow to reddish, sometimes with dorsal edge and tip infuscate. Submedian lines of scutellum slightly nearer to sublateral lines than to each other, enclosing a space 2·2–2·6 times as long as broad. Basitarsus of hind tarsus about 1·25 times as long as second segment .... ***biogradensis*** (p. 71)

Males

Males of *szelenyii*, *intaminatus*, *rossiliensis*, *erroneus* and *dubiosus* are unknown.

1 Antenna (Fig. 103) with ventral plaque of scape situated mainly in the lower half ***?bulgaricus*** (p. 71)

— Antenna with ventral plaque of scape either situated above the middle, or about in the middle, or very long and extending well into both upper and lower halves of the scape.................... 2

2 Antenna (Figs 104, 105) with ventral plaque of scape about 0·33 length of scape and situated wholly in the upper half; whorled setae of funicular segments reach only about to level of the tips of the segments that bear them 3

— Antenna with ventral plaque of scape 0·40–0·75 length of scape, if only 0·40 then situated in the middle of the scape (Fig. 108) but usually much longer and extending well into both upper and lower halves of the scape; whorled setae of funicular segments reaching at least slightly beyond the tips of the segments that bear them 4

3 Marginal vein of forewing distinctly longer than the costal cell and 4·8–5·2 times length of stigmal vein. Body green to blue-green, sometimes with a few brassy reflections ***cavigena*** (p. 70)

— Marginal vein not longer than the costal cell and 4·7–4·9 times length of stigmal vein. Body greenish with a bronze tinge on dorsum of thorax .... ***brevicosta*** (p. 74)

4 Antenna (Figs 106–109, 112) with whorled setae of funicular segments relatively shorter, reaching at most somewhat beyond the tips of the segments that bear them 5

— Antenna (Figs 110, 111) with whorled setae of funicular segments relatively longer, those of the first segment reaching to or slightly beyond the tip of the second segment, the setae of the following segments comparably long 10

5 Antenna (Fig. 108) with ventral plaque of scape only about 0·4 length of scape, situated approximately in the middle and extending only slightly into the upper and lower halves .... ***N.***sp. 1 (p. 72)

— Antenna with ventral plaque of scape more than 0·4 length of scape and extending well into both upper and lower halves 6

6 Externo-dorsal surface of hind coxae with slightly raised reticulation. Malar fovea of moderate size, its length 0·3–0·4 length of malar space. Submedian lines of scutellum distinct. Body without, or with very restricted testaceous markings 7

— Externo-dorsal surface of hind coxae with weak superficial sculpture. Malar fovea small and narrow, or minute. Submedian lines of scutellum usually weak, sometimes absent. Body sometimes extensively or mainly yellow 8

7 Antenna (Fig. 107) with funicular segments relatively longer, the first twice or more than twice as long as the pedicellus and 3·5–3·8 times as long as broad, fourth segment fully 4 times as long as broad .... ***nyemitawus*** (p. 68)

— Antenna (Fig. 106) with funicular segments relatively shorter, the first 1·45–1·85 times as long as the pedicellus and 2·5–2·8 times as long as broad, fourth 3·2–4·0 times as long as broad ***mediterraneus*** (p. 69)

8 Antenna (Fig. 109) with scape 3·0–3·3 times as long as broad. Body dark with lower half or more of head, sometimes sides of pronotum and upper part of mesopleuron, testaceous. (Submedian lines of scutellum weak) .... ***cynodontis*** (p. 73)

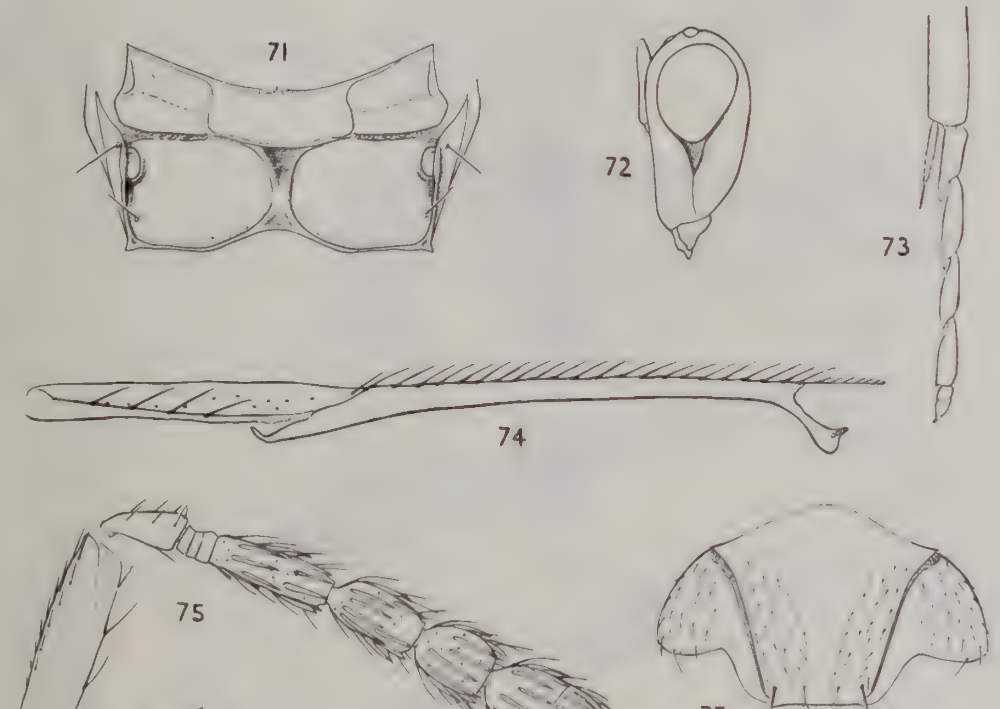
— Antenna (Fig. 112) with scape 4·0–4·6 times as long as broad. Body with extensive and distinctive yellow markings 9

9 Submedian lines of scutellum absent or virtually obsolete; surface of scutellum shiny, with more delicate reticulation. Body with more extensive black markings which have a metallic tinge: vertex mainly, median third or whole of pronotum, at least a broad median longitudinal band on mesoscutum and scutellum, propodeum except sometimes laterally, and dorsum of gaster except its tip and an oval spot before the middle .... ***viridimaculatus*** (p. 67)

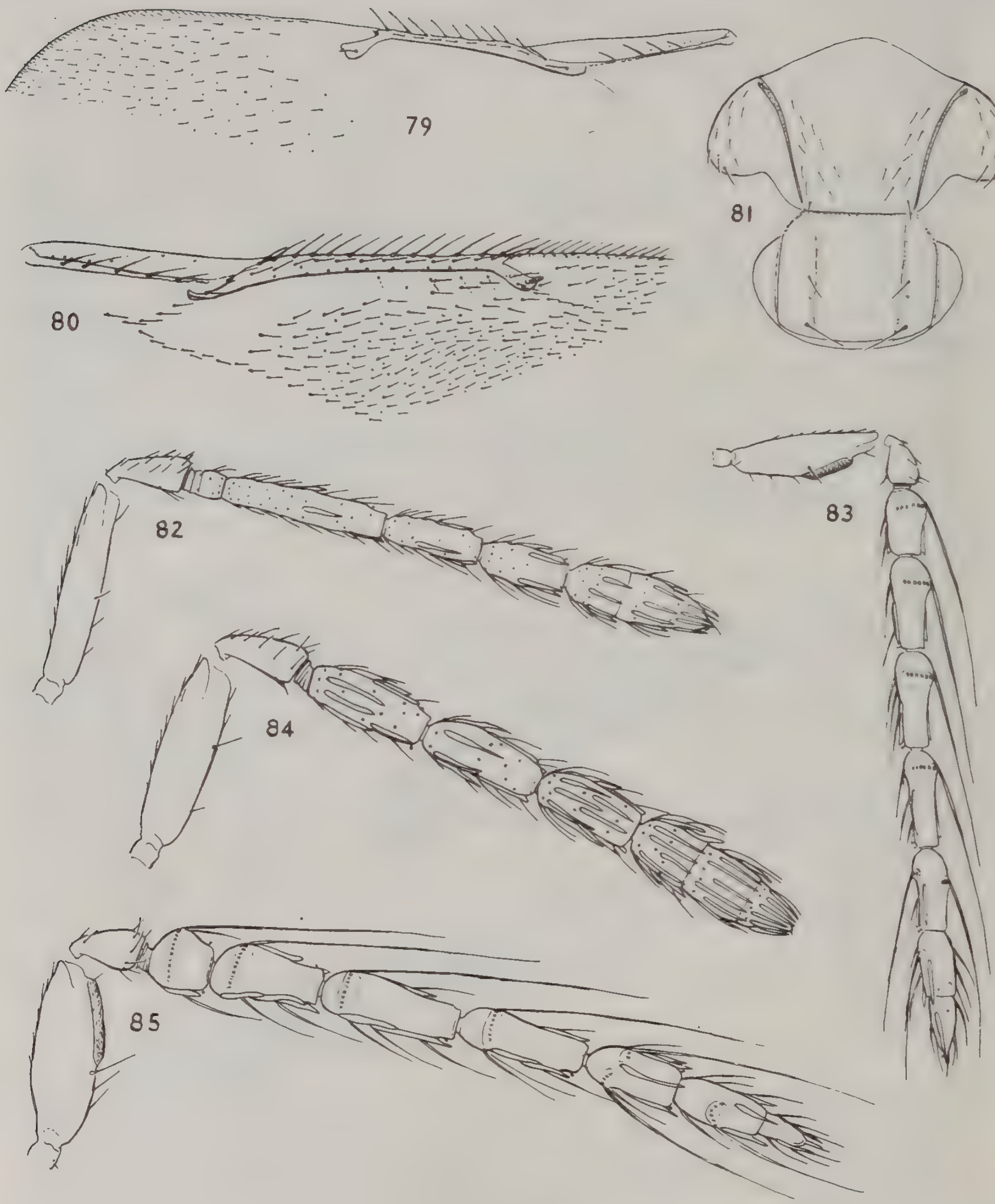
— Submedian lines of scutellum present though superficial; surface of scutellum tending to be less shiny, with rather stronger and coarser reticulation. Body mainly yellow: ocellar triangle, spots on pronotum and mesoscutum, a narrow longitudinal band on the scutellum, two submedian longitudinal bands on the propodeum, sides and a preapical transverse band on the gaster, fuscous .... ***dispersus*** (p. 67)

10 Length of posterior setae of scutellum slightly less than the distance between the submedian lines, the latter slightly nearer to the sublateral lines than to each other. Body usually more extensively yellowish than in the palest specimens of *biogradensis*, sometimes almost wholly yellowish. Antenna (Fig. 110) .... ***gordensis*** (p. 75)

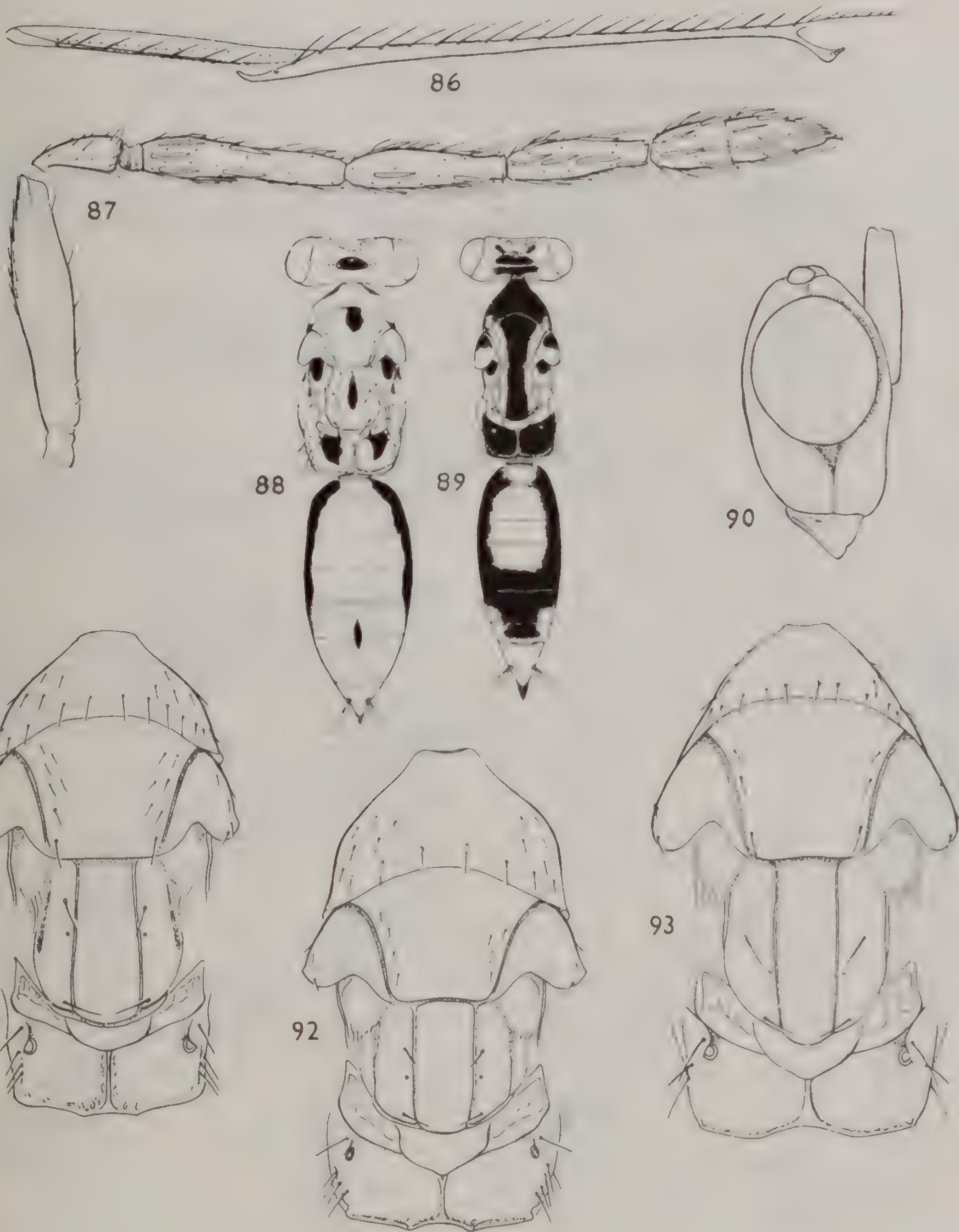
— Length of posterior setae of scutellum about equal to the distance between the submedian lines, the latter hardly nearer to the sublateral lines than to each other. At most the lower half of the head, sides of pronotum, prosternum, prepectus, upper angle of mesopleuron, and base of gaster yellowish. Antenna (Fig. 111).. ***biogradensis***(p. 71)



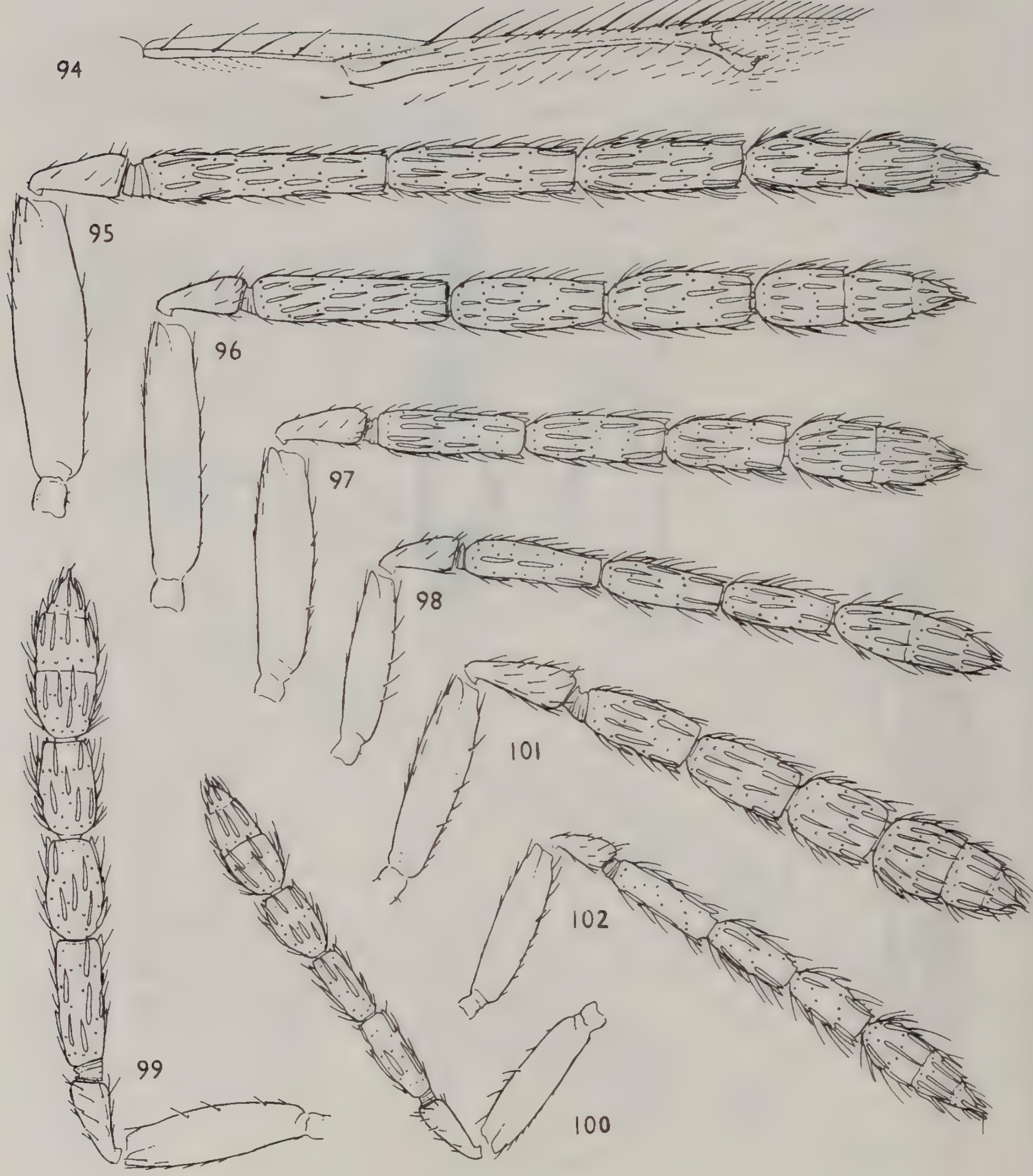
Figs 71–78 *Sigmophora* species. 71–76, *S. brevicornis* (Panzer): (71) ♀, metanotum and propodeum; (72) ♀, head, profile; (73) ♀, mid tibia (distal) and tarsus; (74) ♀, forewing, anterior; (75) ♀, antenna; (76) ♂, antenna. 77, 78, *S. italica* (Domenichini): (77) ♀, mesoscutum and scutellum; (78) ♂, antenna.



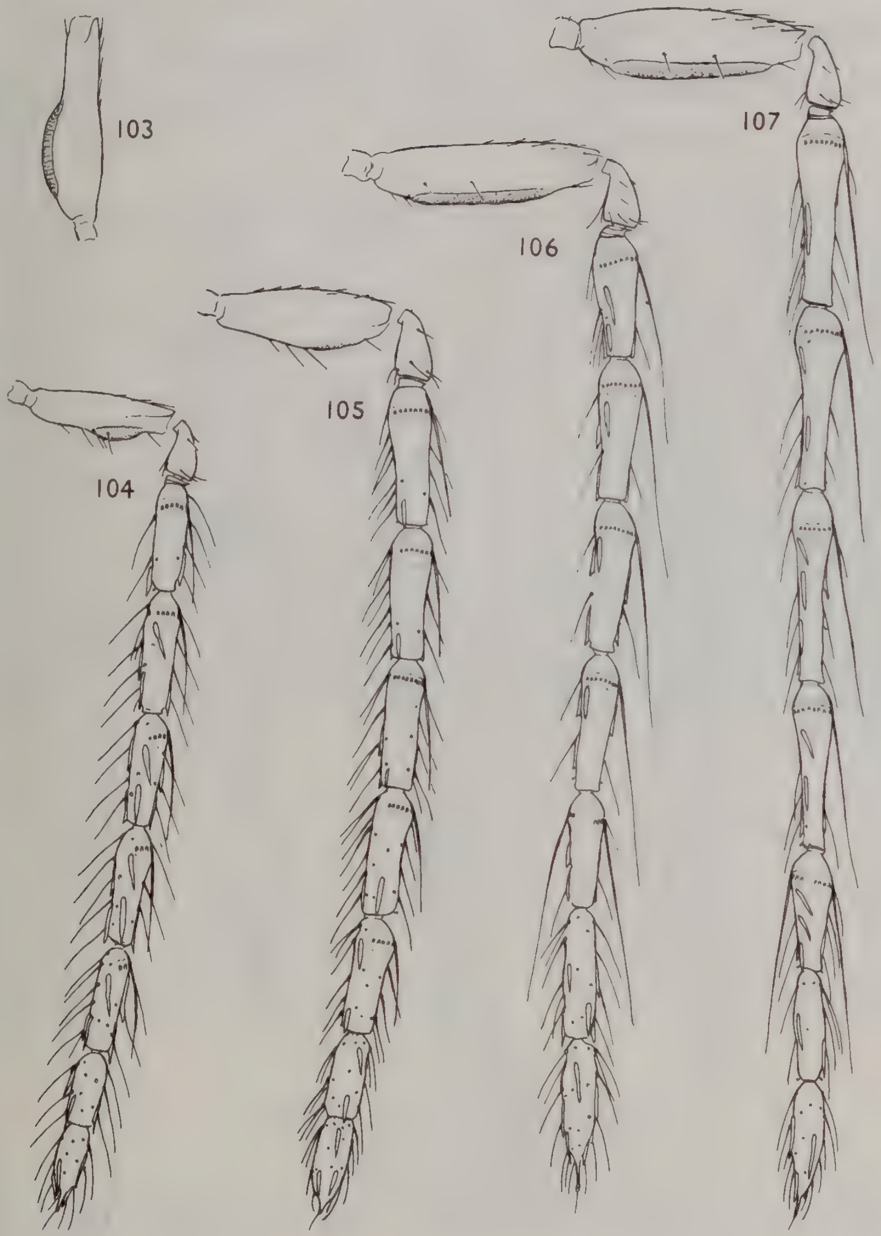
Figs 79–85 79, *Kolopterna kohatensis* sp. n. ♀, forewing, anterior. 80–82, *K. salina* sp. n.: (80) ♀, forewing, anterior; (81) mesoscutum and scutellum; (82) ♀, antenna. 83, *K. quartensis* sp. n. ♂, antenna. 84, 85, *Anaprostocetus acuminatus* (Ratzeburg); (84) ♀, antenna; (85) ♂, antenna.



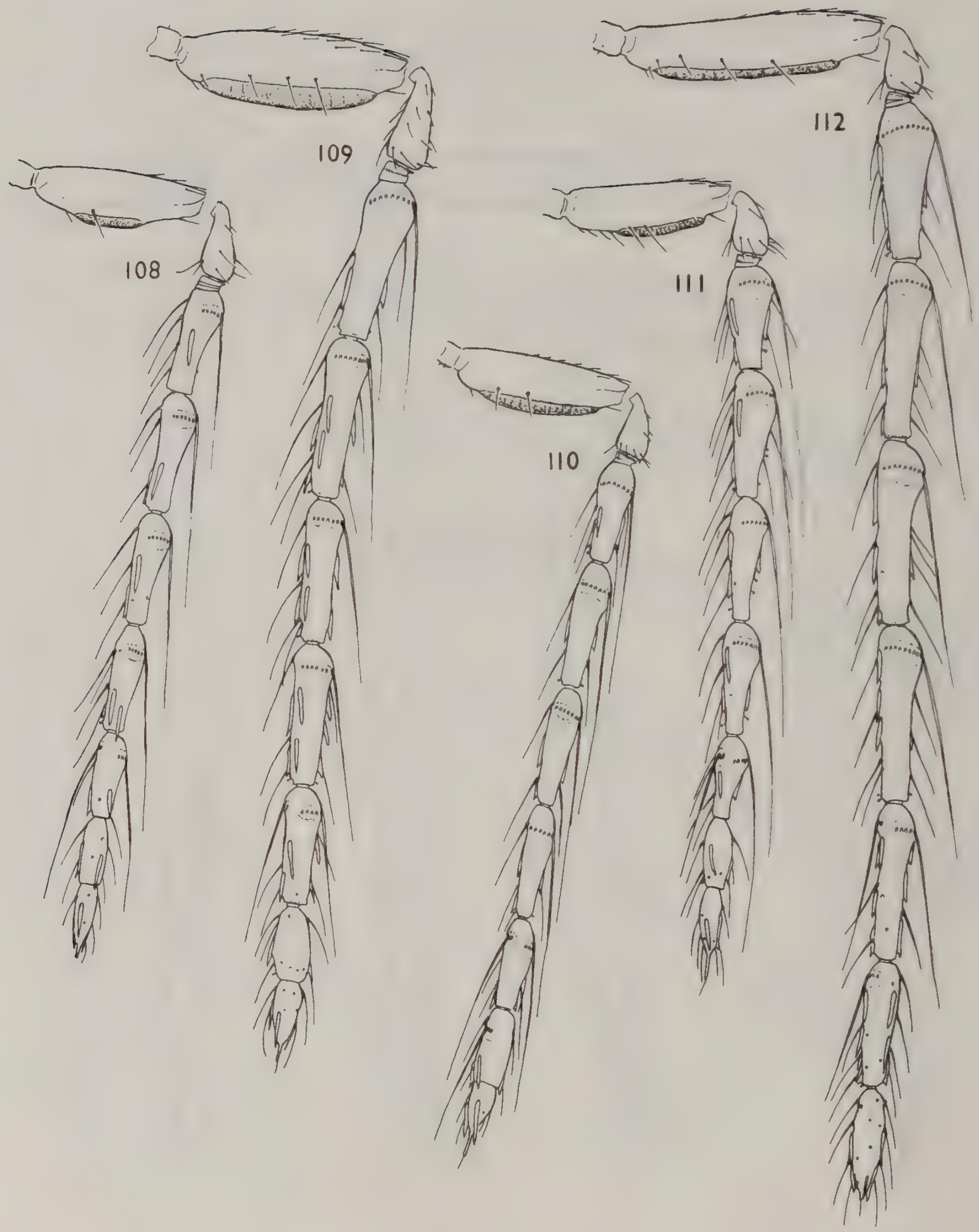
Figs 86–93 *Neotrichoporoides* species. 86, *N. dispersus* Graham ♀, forewing, anterior. 87, *N. viridimaculatus* (Fullaway) ♀, antenna. 88, *N. dispersus* Graham ♀, body. 89, *N. viridimaculatus* (Fullaway) ♀, body. 90, *N. nyemitawus* (Rohwer) ♀, head, profile. 91, *N. mediterraneus* Graham ♀, thorax. 92, *N. gordensis* sp. n. ♀, thorax. 93, *N. cavigena* sp. n. ♀, thorax.



Figs 94–102 *Neotrichoporoides* species, females. 94, *N. brevicosta* sp. n., forewing, anterior. 95, *N. nyemitawus* (Rohwer) holotype, antenna. 96, *N. szelenyii* (Erdös) lectotype, antenna. 97, *N. mediterraneus* Graham, antenna. 98, *N. cavigena* sp. n., antenna. 99, *N. rossiliensis* sp. n., antenna. 100, *N. gordensis* sp. n., antenna. 101, *N. cynodontis* (Domenichini), antenna. 102, *N. biogradensis* sp. n., antenna.



Figs 103–107 *Neotrichoporoides* species, males. 103, *N.* ? *bulgaricus* sp. n., left antennal scape. 104, *N. cavigena* sp. n., antenna. 105, *N. brevicosta* sp. n., antenna. 106, *N. mediterraneus* Graham, antenna. 107, *N. nyemitawus* (Rohwer), antenna.



Figs 108–112 *Neotrichoporoides* species, male antennae. 108, *N.* sp. near *dubiosus* sp. n. 109, *N. cynodontis* (Domenichini). 110, *N. gordensis* sp. n. 111, *N. biogradensis* sp. n. 112, *N. viridimaculatus* (Fullaway).

Neotrichoporoides viridimaculatus (Fullaway) **comb. n.**

(Figs 87, 89, 546, 693)

[*Geniocerus longiscapus* Thomson; Erdös, 1954: 355. Misidentification.]
Burksia viridimaculata Fullaway, 1955: 410; Burks, 1979: 1004. Holotype ♀, HAWAII: Honolulu, 4.xii.1920 (*D. T. Fullaway*) (Hawaiian Ent. Soc. coll.) [examined].
Ceratoneura leopardina de Santis, 1957: 58. Holotype ♀, ARGENTINA: La Plata (Mus. La Plata, Buenos Aires) [examined]. [Synonymized by Domenichini, 1966*a*: 140.]
Tetrastichus viridimaculatus (Fullaway) Domenichini, 1966*a*: 140; 1966*b*: 53; Bouček, 1970: 93; Kostjukov, 1978*b*: 451.

♀. Differs from that of *dispersus* as follows: Antenna (Fig. 87) with scape as long as or slightly (1·1 times) longer than an eye. Scutellum: submedian lines absent or, rarely, weakly indicated in part; surface relatively shiny, with excessively fine engraved reticulation. Mid lobe of mesoscutum moderately shiny, with excessively fine engraved reticulation whose areoles vary from isodiametric to about 1·5 times as long as broad. Gaster on average longer, slightly longer than head plus thorax and 2·6–3·0 times as long as broad, very slightly scuminate, with last tergite as long as or a little longer than broad. The colour pattern of the body is also characteristic and distinguishes *viridimaculatus* from all other European species of this genus. The body is more extensively marked with black than in *dispersus* and the black areas have a strong to blue metallic tint. The dark areas (Fig. 89) are as follows: ocellar triangle, a dark mark behind the ocelli which tends to be T-shaped, a pair of spots on frons just in front of ocellar triangle (sometimes confluent), usually a spot on face below antennal toruli; middle third or more of pronotum and a spot on each side just mesad of the spiracle (sometimes fused with the median spot), often a small triangular spot on each lateral angle; mid lobe of mesoscutum except a more or less broad stripe just mesad of each notaulus, a subtriangular spot on the front half of each scapula; a small to large spot on front half of each axilla, sometimes the whole axilla except an internal stripe; a broad median longitudinal stripe on scutellum; sides of metanotum more or less; propodeum except sometimes the anterolateral angles, mesosternum more or less, a spot on upper part of mesopleuron, sutures defining the metapleuron (metapleuron and mesopleuron sometimes infuscate); gastral petiole; dorsal surface of gaster except a large oval antemedial spot, an irregular spot on each side of the penultimate tergite, and the last tergite wholly or mainly. Antennae brown to black with scape testaceous or yellow beneath. Tegulae yellow. Wings hyaline or subhyaline, venation yellow to testaceous.

♂. Differs from that of *dispersus* in the characters noted in the key to species (p. 60), also in having the antennal scape slightly shorter, 1·30–1·35 times as long as an eye. Genitalia (Fig. 546).

MATERIAL EXAMINED

9 ♂, 21 ♀. **Argentina, Bulgaria, Czechoslovakia, France, Hawaii, Hungary, India, Italy, Madeira, North America, Portugal, U.S.S.R., Yugoslavia.**

HOST. Unknown, but probably some species of Diptera on coarse grasses. I have swept it in company with *dispersus*, from stands of *Hyparrhenia hirta* in Madeira.

Neotrichoporoides dispersus Graham

(Figs 86, 88, 112, 547)

Tetrastichus sp. near *viridimaculatus* (Fullaway); Graham, 1981: 18.
Neotrichoporoides dispersus Graham, 1986: 4. Holotype ♀, SPAIN: Malaga, Benicassim, 22–24.vi.1974 (*Bouček*) (BMNH) [examined].

Full descriptions of both sexes have been published elsewhere. Body of ♀ (Fig. 88), forewing venation (Fig. 86), ♂ genitalia (Fig. 547).

MATERIAL EXAMINED

13 ♂, 37 ♀. **Italy, Madeira, Sardinia, Spain, Yugoslavia**.

HOST. Unknown.

Neotrichoporoides nyemitawus (Rohwer) **comb. n.**

(Figs 95, 107, 548)

Tetrastichus nyemitawus Rohwer, 1921: 131–132. Holotype ♀, INDIA: Coimbatore, 8.viii.1916 (*Ramakrishna Ayyar*) (USNM) [examined].

♀. Antenna (Fig. 95) with scape 0·97 length of eye, reaching well above vertex; pedicellus plus flagellum 1·70–1·75 times breadth of mesoscutum; flagellum very slender, virtually filiform; F1 2·2–2·4 times length of pedicellus and 5·2–5·5 times as long as broad, as long as or slightly longer than the clava, F2 nearly 4 times as long as broad, F3 about 3 times; clava 4·0–4·7 times as long as broad; sensilla very numerous, in about 4 rows on each funicular segment (or in 5 rows on F1). Reticulation of scutellum tending to be slightly coarser-meshed than in *mediterraneus* (except perhaps at front). Tibiae and tarsi rather more slender than in *mediterraneus*; spur of mid tibia 0·4 length of basitarsus, the latter about 8 times as long as broad. Forewing almost 3 times as long as broad; *SM* with 5–7 dorsal setae. Gaster 2·5–3·0 times as long as broad; tip of hypopygium situated at 0·35–0·40 length of gaster.

Head and thorax mainly bright or blue-green; gaster bronze-green to green, with hind margin of tergites more or less broadly lilac to purplish. Legs yellowish, with mid coxae sometimes slightly darkened at base and about proximal half of hind coxa dark. Length 2·8–3·3 mm.

♂. Differs from that of *mediterraneus* in having malar space on average slightly longer, 0·60–0·65 length of eye; antenna (Fig. 107) with scape a little longer, about 1·2 times as long as eye; funicular segments more elongate, F1 slightly shorter than F2 but twice or more than twice length of pedicellus, 3–4 times as long as broad, following segments subequal in length, each 3·7–4·0 times as long as broad; clava 8·2–9·0 times as long as broad, about as long as, or slightly longer than, F3 plus F4, its segments separated by strong constrictions, subequal in length or decreasing very slightly, each about 3 times as long as broad; spine slender, 0·25–0·35 length of C3; whorled setae of funicular segments reaching somewhat beyond the tips of the segments that bear them, but not so far beyond as in *mediterraneus*. Gaster oblong, somewhat shorter than but nearly as broad as thorax, without ventral plica. Genitalia (Fig. 548) very elongate, about 7 times as long as broad; aedeagus acutely pointed, with a pair of minute, subcircular, transparent lobes at its tip; length of gaster 43, of genitalia 27.

Colour as in ♀. Length 2·1–2·5 mm.

MATERIAL EXAMINED

5 ♂, 9 ♀. **Kenya**: 1 ♀, Nairobi, from *Atherigona conigera* Emden on *Melinis minutiflora* (Gramineae), 15.x.1978; 1 ♀, from *A. soccata* Rondani on *Sorghum*, 5.ii.1979; 1 ♂, 1♀, from same host on *Sorghum bicolor*, 15.xii.1979, 1♀ from same host, 25.ii.1981 (*A. Delobel*); 1 ♂, Kibos, near Kisumu, 26.x.1979 (*A. Delobel*); 2♀, M'Bita, from *A. soccata* on *Sorghum bicolor* (*A. Delobel*) (ICIPE). **India**: 3 ♂, 3 ♀, Tamil Nadu, Coimbatore, 7.vii.1916, 9.vii.1916, 8.viii.1916 (holotype) (*Ramakrishna Ayyar*) (USNM). **Thailand**: 1 ♂, 1 ♀, Suwan Farm, from *Atherigona soccata*, 19.vii.1977 (*K. Yasumatsu*) (BMNH).

HOSTS. *Atherigona soccata* Rondani and *A. conigera* Emden.

Neotrichoporoides szelenyii (Erdös) **comb. n.**

(Fig. 96)

Geniocerus szelenyii Erdös, 1951: 230–232. LECTOTYPE ♀, HUNGARY: Soltvadkert, 14.viii.1945 (*J. Erdös*) (TM), here designated [examined].
Aprostocetus szelenyii (Erdös) Graham, 1961*a*: 50.
Tetrastichus szelenyii (Erdös) Domenichini, 1966*a*: 141; 1966*b*: 50.

Geniocerus szelenyii is represented in the Erdös collection by 4 females. The single ♀ from Soltvadkert is designated as lectotype.

♀. Differs from that of *mediterraneus* in having antennal scape (Fig. 96) 0·90–0·97 length of eye, reaching slightly above vertex, F1 about twice as long as pedicellus and slightly shorter than clava, 4·0–4·5 times as long as broad, F2 2·8–3·3 times, F3 2·2–2·9 times as long as broad; clava about as long as F3 plus half of F2; forewing *SM* with 5–7 dorsal setae. Length 2·4–2·7 mm.

♂. Differs from that of *nyemitawus* in hving antennal flagellum slightly shorter (pedicellus plus flagellum 1·55–1·65 breadth of mesoscutum) and rather less slender, funicular segments relatively shorter, F1 relatively shorter in proportion to the pedicellus.

MATERIAL EXAMINED

7 ♀. **Crete**: 1 ♀, Irákion, Festós (Messurás), 16.x.1972 (*A. C. & W. N. Ellis*) (ITZ). **Hungary**: 1 ♀ (lectotype), Soltvadkert, on edge of a saltmarsh, 14.viii.1945; 1 ♀, Tompa, in sandy field, 9.ix.1948, 1 ♀, 11.ix.1948, 1 ♀, 14.v.1949 (*Erdös*) (TM) (paralectotypes). **Portugal**: 1 ♀, Estremadura, Oeiras, 7.ix.1979 (*A. van Harten*) (ITZ). **U.S.S.R.**: 1 ♀, Azerbaijan, Baku, 2.vii.1967 (*Bouček*) (BMNH).

HOST. Unknown, but probably some species of *Atherigona* associated with grasses. Erdös (1951: 232) stated that it appeared to be associated with *Andropogon* [=*Dichanthium*] *ischaemum* (Gramineae).

Neotrichoporoides intaminatus (Walker) comb. n.

Entedon intaminatus Walker, 1872: 127. Lectotype ♀, MADEIRA (*Wollaston*) (BMNH), designated by Graham (1979: 283) [examined].
Tetrastichus intaminatus (Walker) Graham, 1979: 283–284.

♀. Differs from ♀ of *szelenyii* in the characters given in the key to females (couplet 8). Antenna with scape equal in length to eye, reaching distinctly above vertex; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus about half as long as F1; funicle very slender, very slightly stouter than pedicellus, its segments decreasing slightly in length; F1 4·0–4·3 times, F2 3·7–4·0 times, F3 3·0–3·5 times as long as broad; clava very slightly broader than F3, about 1·2 times length of F1, 4·0–4·5 times as long as broad. Gaster lanceolate-ovate, about twice as long as broad, acute but not acuminate (apical angle about 65°); last tergite a little broader than long; ovipositor sheaths not or hardly projecting beyond tip of last tergite.

Body bright blue-green (propodeum less bright greenish); head yellow, in lectotype with a blackish spot on each side of frons between median ocellus and toruli, also middle of frons infuscate; ocellar triangle and a broad band on occipital surface above foramen magnum black; in Canary Is ♀ with only face, genae, and inner and outer orbits yellow. Upper angle of mesopleuron yellow, in lectotype also edges of sides of pronotum, prosternum and prepectus. Antennal scape yellow with dorsal edge narrowly darkened; pedicellus fuscous, yellow beneath and at tip; flagellum brown. Legs yellow; mid coxae fuscous basally, hind coxae mainly black; pretarsus and fourth tarsomere of all legs brown. Tegulae yellow. Wings hyalime, venation yellow. Length 2·3–2·4 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. **Madeira**: 1 ♀ (lectotype), unlocalized (*T. V. Wollaston*). This specimen may be the only one actually taken, though proof is lacking. **Canary Is**: 1 ♀, Tenerife, Santa Ursula, 1.vii.1979 (*M. Báez*) (MJG).

HOST. Unknown but probably some species of *Atherigona* on coarse grass.

COMMENTS. I did not find this species when collecting in Madeira. Possibly Wollaston's specimen may have been introduced with some cultivated grass. Many forms closely related to *intaminatus*, some of which are certainly valid species, occur in Africa and Asia; several of them parasitize species of *Atherigona* which are found on coarse grasses, especially genera of the tribe Andropogoneae which include *Saccharum* (sugar-cane), *Sorghum* and others. Several of these grasses have been introduced to Madeira during the last 500 years.

Neotrichoporoides mediterraneus Graham

(Figs 91, 97, 106, 549)

Tetrastichus sp. near *szelenyii* (Erdös); Graham, 1981: 18.
Neotrichoporoides mediterraneus Graham, 1986: 6. Holotype ♀, MADEIRA: São Martinho, 21.v.1980 (*Graham*) (BMNH) [examined].

Full descriptions of both sexes have been published elsewhere. Thorax ♀ (Fig. 91), antenna ♀ (Fig. 97), antenna ♂ (Fig. 106), genitalia ♂ (Fig. 549).

MATERIAL EXAMINED

12 ♂, 18 ♀. **Canary Is, Czechoslovakia, France, India, Madeira, Sardinia, Spain, U.S.S.R.**

HOST. Unknown.

Neotrichoporoides cavigena sp. n.

(Figs 93, 98, 104, 551)

♀. Head 1·1–1·2 times as broad as mesoscutum, 2·10–2·25 times as broad as long; temples about 0·15 length of eyes, rounded; POL not or very slightly greater than OOL; OOL 2·0–2·3 OD. Eyes 1·25–1·30 times as long as broad, separated by about 1·2 times their length. Malar space 0·55–0·62 length of eye; sulcus straight, fovea large and deep, triangular, its bottom granulate, extending about half-way down the gena. Mouth about 1·3 times malar space. Antenna (Fig. 98) with scape about 3 times as long as broad, somewhat shorter than eye, not reaching vertex; pedicellus plus flagellul 1·6–1·7 breadth of mesoscutum; pedicellus 2·2–2·4 times as long as broad, about two-thirds as long as F1; funicle very slender, proximally not or hardly stouter than pedicellus, thickening very slightly distad, its segments decreasing very slightly in length, F1 3·0–3·6 times, F2 2·8–3·3, F3 2·0–2·7 times as long as broad; clava very slightly broader than F3, about 3 times as long as broad, as long as F3 plus half to two-thirds of F2, pointed, indistinctly segmented, C1 somewhat longer than broad and occupying nearly half the total length, C2 much shorter and not longer than broad; spine moderately slender, about 0·35 length of C3, apical seta somewhat longer than the spine; sensilla moderately numerous, in 2 or 3 irregular rows on each funicular segment and first segment of clava, in 1 row on the other claval segments; the more proximal sensilla on each segment have their distal half or so standing out at an angle, the distal ones are subdecumbent; setae of flagellum rather strong, somewhat outstanding. Thorax (Fig. 93) 1·6–1·9 times as long as broad; propodeal slope about 45°. Pronotum 0·50–0·75 length of mesoscutum. Mid lobe of mesoscutum somewhat broader than long, moderately convex, not very shiny, reticulation excessively fine, engraved, with areoles at most slightly longer than broad; no median line; 3–4 adnotaular setae on each side, weak and pale, the foremost short, the others increasing in length. Scutellum a little longer than broad, rather weakly convex in long axis, nearly or quite as long as mesoscutum, sculptured as mesoscutum but its areoles tending to be longer than broad; submedian lines distinct, about equidistant from each other and from sublateral lines, enclosing a space 3·0–3·5 times as long as broad; setae pale and rather weak, length of anteriors distinctly less than distance between submedian lines, posteriors somewhat longer, anterior pair in or slightly before the middle. Dorsellum about 2·5 times as broad as long, hind margin strongly curved or angulate. Propodeum 1·3–1·5 times as long as dorsellum, its hind corners nearly rectangular; surface moderately shiny, with fine almost engraved reticulation; median carina strong, relatively thin, but expanded posteriorly; spiracles small, nearly circular, about half their diameter from metanotum; callus with 3–5 setae. Legs of medium length, rather slender; hind coxae oblique, about twice as long as broad, shiny, with extremely fine and superficial reticulation, hind edge strongly curved; hind femora 3·5–3·8 times as long as broad; spur of mid tibia about 0·6 length of basitarsus, fourth tarsomere much shorter than basitarsus. Forewing 2·7–2·8 times as long as broad; costal cell 13–14 times as long as broad; *SM* with 4 dorsal setae; *M* distinctly longer than costal cell, 5·5–6·0 times length of *ST*, moderately thick proximally but tapering distad, its front edge with 12–14 setae; *ST* at about 45°, very thin proximally but gradually expanding to form a small, poorly defined stigma having a short uncus; speculum very small, not extended below *M*, nearly closed below; subcubital line of setae ending level with distal edge of speculum or extending nearly to level of basal vein; wing beyond speculum at first thickly pilose, then very thickly towards apex; cilia 0·5–0·65 *ST*. Hindwing bluntly pointed, cilia about 0·4 breadth. Gaster ovate, nearly as long as head plus thorax, about as broad as thorax, 1·7–2·0 times as long as broad, acute but not acuminate; last tergite somewhat shorter than its basal breadth; ovipositor sheaths projecting very slightly; tip of hypopygium at about half length of gaster.

Body black with strong green to blue-green tints; here and there some brassy flecks, disc of gaster more or less bronze; antennae black; coxae, and about proximal half of all femora, coloured like the body; legs otherwise yellowish or yellowish testaceous, the fore tarsi brown, mid and hind tarsi darkening distad to fuscous at tips; mid and hind tibiae sometimes with slight dark shade before the middle, or broadly black; tegulae yellowish, sometimes with hind edge dark; wings hyaline, venation testaceous to fuscous. Length 1·9–2·1 mm.

♂. Antenna (Fig. 104) with scape hardly as long as eye, hardly 3 times as long as broad, broadest a little above the middle, ventral plaque nearly or about one-third length of scape, placed just above the middle; pedicellus plus flagellum about 3 times breadth of mesoscutum; pedicellus about twice as long as broad and about two-thirds as long as F1; funicle very slender, proximally hardly stouter than pedicellus, tapering a little distad, its four segments subequal in length, each about 3 times as long as broad or slightly more; clava hardly broader than F4, about 6 times as long as broad and slightly longer than F3 plus F4, acute, with C1 separated by a short peduncle and so appearing like a funicular segment except that it is slightly shorter, C2 slightly shorter than C1 and about twice as long as broad; setae composing the subbasal whorls reach about to the tips of the segments which bear them; segments of funicle and clava also with numerous shorter setae arranged in 3 or 4 irregular whorls on each segment and standing out at 35°–45°; sensilla sparse. Gaster oblong, slightly shorter and narrower than thorax, with ventral plica. Genitalia (Fig. 551).

MATERIAL EXAMINED

4 ♂, 3 ♀. Holotype ♀, **France**: Vaucluse, Champeau, W. of Merindol, 24.vii.1974 (*Graham*) (BMNH).

Paratypes. **Bulgaria**: 1 ♂, Sandanski, vi.1969 (*Kocourek*) (BMNH). **Czechoslovakia**: 1 ♂, Kamenín nr. Štúrovo, 27.vii.1955 (*Bouček*) (BMNH). **France**: 1 ♀, Alpes de Haute Provence, Vachères, on *Salix*, 21.vii.1978 (*Gijswijt*) (MJG); 1 ♂, 1 ♀, Lot, Le Bouyssou, near Figeac, 8.viii.1974 (*Graham*) (BMNH); 1 ♂, Dordogne, St. André d'Allas, near Sarlat, 3.viii.1974 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. On the two occasions when I have taken this species in France, the specimens were swept from coarse grasses in marshy places with *Phragmites*.

Neotrichoporoides bulgaricus sp. n.

♀. Differs from that of *cavigena* in having the body testaceous-marked; F1 as long as the clava; space between submedian lines of scutellum broader, at most 2·6 times as long as broad; subcubital line of setae on forewing ending well distad of speculum. Differs from females of *dubiosus* and *biogradensis* in larger malar fovea and longer F1 of antenna (as long as clava). Antenna with pedicellus about 2·4 times as long as broad; F1 3·5 times as long as broad, about 1·8 times length of pedicellus, F2 3·0 times, F3 fully 2·5 times, as long as braod; clava 3·65 times as long as broad and somewhat longer than F3.

Body partly black with strong blue-green metallic tint, with the following parts testaceous: head except ocellar triangle and a transverse mark on occiput above foramen magnum; pronotum except a spot above each spiracle; prosternum, prepectus, upper part of mesopleuron, sides of mid lobe of mesoscutum and of scapulae; axillae internally, scutellum laterally. Dorsellum yellow. Gaster with a poorly defined reddish longitudinal spot in basal half; last tergite reddish-marked. Antennal scape testaceous, slightly darker dorsally; pedicellus testaceous beneath and at apex, otherwise fuscous; flagellum blackish. Legs testaceous with hind coxa darkened in basal half; fourth tarsomere fuscous, third brownish. Tegulae yellow. Wings subhyaline, venation testaceous. Length 2·7 mm.

♂. Unknown. A male with distinctive scape (Fig. 103) might belong to this species.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Bulgaria**, Sandanski, vii.1966 (*M. Kocourek*) (BMNH).

HOST. Unknown.

Neotrichoporoides biogradensis sp. n.

(Figs 102, 111, 554, 667)

♀. Differs from that of *cavigena* as follows. Fovea of malar sulcus smaller, extending only about 0·33 length of malar space, its bottom hardly granulate. Antenna (Fig. 102) with funicular segments tending to decrease more obviously in length and on average relatively shorter, F1 2·6–3·4 times as long as broad and 1·25–1·50 times length of pedicellus, F2 2·4–2·8 times, F3 about twice, as long as broad; clava 3·0–3·6 times as long as broad, somewhat shorter than F2 plus F3; sensilla tending to be sparser, in two rows on each funicular segment. Scutellum as broad as or even very slightly broader than long; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·2–2·6 times as long as broad; anterior setae slightly to very distinctly before the middle. Propodeum 1·5–1·8 times length of dorsellum; spiracles separated by nearly their diameter from hind margin of metanotum; callus with (3–) 4–6 setae.

Forewing with *M* 7·0–8·0 times length of *ST*, its front edge with 10–15 setae; speculum closed below. Gaster as long as, or a little longer than, head plus thorax, very slightly acuminate; last tergite only slightly shorter than its basal breadth. Hypopygium (Fig. 667).

Body with the following parts bright testaceous: mouth edge narrowly to broadly, sometimes face, prosternum, sides of pronotum, prepectus, upper angle of mesopleuron, base of gaster broadly, both dorsally and ventrally. Antennal scape testaceous with dorsal edge and tip sometimes fuscous; pedicellus often testaceous beneath and sometimes also at its tip. Legs including fore and mid coxae and usually distal third to half of hind coxae, bright testaceous; tarsi brownish distally, or gradually darkening from near base to their tips. The testaceous basal area of the gaster dorsally has a lateral dark spot on each side of the basal tergite, often also smaller dark spots on the sides of the two following tergites. Length 1·4–2·1 mm.

♂. Differs from ♀ as follows. Antenna (Fig. 111) with scape slightly longer than an eye, reaching well above vertex, 3·2–3·3 times as long as broad, broadest in upper half, its ventral plaque half or somewhat more than half length of scape and placed mainly in the upper half; pedicellus plus flagellum about 2·5 times breadth of mesoscutum; pedicellus hardly twice as long as broad, about 0·66 length of F1; funicle very slender, proximally not stouter than pedicellus, tapering very gradually distad; F1 2·5–2·7 times as long as broad, slightly shorter than the others (which are subequal in length), each 3·0–3·7 times as long as broad; clava 6–7 times as long as broad, as long as or slightly longer than F3 plus F4, with C1 2·0–2·5 times as long as broad, occupying slightly more than half the total length, C2 segment slightly shorter and narrower but of similar proportions, C3 somewhat shorter and narrower than C2, acute, spine slender and about 0·33 length of third segment; each funicular segment, and first and second claval segments, slightly swollen basally and thence taper distad; lengths of long dark whorled setae as in the figure. Gaster oval, shorter than or nearly as long as thorax, about as broad as thorax, subobtuse, with ventral plica. Genitalia (Fig. 554). Antennal scape testaceous with dorsal edge and ventral plaque dark. Length 1·2–1·4 mm.

MATERIAL EXAMINED

3 ♂, 16 ♀. Holotype ♀, **Czechoslovakia**: Štúrovo-Kováčov, 18.vii.1969 (*Bouček*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Štúrovo-Kováčov, 17.vii.1969, 4 ♀, 18.vii.1969 (*Bouček*) (BMNH). **Italy**: 1 ♀, Aosta, Quart, 13.ix.1969 (*Bouček*) (BMNH). **Yugoslavia**: 2 ♀, Dalmatia, Biograd na Moru, 26.vii.1966 (*Hoffer & Šťastná*) (BMNH), 4 ♀, 13.vii.1968, 1 ♀, 20.vii.1968, 1 ♂, 18.vii.1968, 2 ♂, 19.vii.1968 (*Bouček*) (BMNH); 1 ♀, Montenegro, Crna Gora, Sutomore, 6.vii.1968 (*Bouček*) (BMNH). **U.S.S.R.**: 1 ♀, Moldavia, Karmanovo, 27.viii.1963 (*Bouček*) (BMNH).

HOST. Unknown.

Neotrichoporoides dubiosus sp. n.

♀. Differs from that of *biogradensis* in the characters given in the key to species (p. 59). Length 2·0–2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **Czechoslovakia**: Slovakia or., Svätá Mária, 13.ix.1951 (*A. Hoffer*) (BMNH).

Paratype. 1 ♀, same data as holotype (BMNH).

Neotrichoporoides sp. 1

(Figs 108, 552)

♂. Antenna (Fig. 108). Genitalia (Fig. 552). This male appears to be near *dubiosus* (p. 72) and might even belong to it.

MATERIAL EXAMINED

1 ♂. **Czechoslovakia**: Moravia, Mikulov, Svatý Kopeček, 4.vii.1952 (*A. Hoffer*) (BMNH).

HOST. Unknown.

Neotrichoporoides cynodontis (Domenichini) **comb. n.**

(Figs 101, 553)

Tetrastichus cynodontis Domenichini, 1967: 86–88; Kostjukov, 1978*b*: 452. Holotype ♀, ITALY (*A. Goidanich*) (MIZSU) [not examined].

♀. Head about 1·5 times as broad as mesoscutum, about 2·2 times as broad as long; POL equal to or very slightly less than OOL; OOL 3·0–3·5 OD. Impressed line connecting lateral ocelli with eyes weak or obsolescent. Eyes about 1·15 times as long as broad, separated by 1·3 times their length, nearly bare. Malar space about 0·6 length of eye, nearly straight, fovea narrowly triangular and about 0·25 malar space. Mouth about 1·3 times malar space. Head moderately shiny with excessively fine engraved reticulation; setae pale and short, their length less than OD. Antenna (Fig. 101) with scape slightly shorter than eye but reaching lower edge of median ocellus; pedicellus plus flagellum 1·20–1·25 breadth of mesoscutum; pedicellus nearly 3 times as long as broad, slightly constricted before its base, slightly shorter than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing rapidly in length, F1 2·5–3·0 times, F2 about twice, F3 1·2–1·5 times, as long as broad; clava slightly broader than F3, 2·0–2·5 times as long as broad, with C1 subquadrate and occupying slightly less than half the total length, C2 a little shorter and slightly broader than long, C3 much shorter than second, spine nearly half length of C3, its apical seta slightly shorter than the spine; sensilla moderately numerous, short, in 3–4 rows on F1, in 3 rows on F2, in 2 rows on distal segments, decumbent or nearly so. Thorax about 1·7 times as long as broad; propodeal slope about 30°. Pronotum nearly half length of mesoscutum. Mid lobe of mesoscutum slightly broader than long, moderately convex, relatively shiny, with excessively fine and delicately engraved or superficial reticulation, areoles not much longer than broad; 4–5 pale, short adnotaular setae on each side, even the hindmost hardly as long as the anterior setae of scutellum. Scutellum weakly convex in long axis, about as long as broad, sculptured like the mesoscutum but on the disc rather less finely; submedian lines very weak or obsolescent, somewhat nearer to sublateral lines than to each other, enclosing a space nearly 3 times as long as broad; setae pale, anterior pair much shorter than distance between submedian lines, posterior pair somewhat longer. Dorsellum about 2·5 times as broad as long, shiny, with hind margin obtusely angulate. Propodeum slightly longer than dorsellum, hind corners rectangular; moderately shiny, with fine almost engraved reticulation; median carina strong, raised, rather thin and hardly expanded posteriorly; spiracles small, about their diameter from metanotum; callus with 3–4 setae. Legs of medium length and thickness; hind coxae about twice as long as broad, moderately shiny, with extremely fine engraved reticulation, hind margin strongly curved; hind femora about 4·5 times as long as broad; spur of mid tibia about 0·5 length of basitarsus; fourth tarsomere of mid and hind legs obviously shorter than basitarsus. Forewings 2·7–2·9 times as long as broad; costal cell distinctly shorter than *M*, about 12 times as long as broad; *SM* with 4–5 dorsal setae; *M* moderately thick proximally but tapering distad, 7–8 times length of *ST*, its front margin with 13–15 setae; *ST* at about 30°, thin basally but gradually expanding to form a subtriangular stigma; speculum partly open below; subcubital line of setae ending somewhat distad of distal edge of speculum; wing beyond densely pilose, very densely towards apex; cilia about 0·5 length of *ST*. Hindwing obtuse; cilia 0·20–0·25 breadth. Gaster lanceolate, acuminate, somewhat longer than head plus thorax, 2·5–2·7 times as long as broad, about as broad as thorax; last tergite somewhat longer than broad; ovipositor sheaths projecting somewhat; tip of hypopygium slightly before middle of gaster.

Body black, with rather weak bluish, greenish and bronze tints; upper angle of mesopleuron, mouth edge more or less broadly, and sometimes inner orbits, testaceous. Antennal scape testaceous; pedicellus sometimes pale beneath and at apex; anelli brown, flagellum black. Legs yellowish testaceous with tips of tarsi brownish, proximal half to two-thirds of mid and hind coxae black. Tegulae yellowish, sometimes brownish posteriorly. Wings grey-tinged, venation yellowish or testaceous. Length 2·60–3·25 mm.

♂. Antenna with scape fully as long as eye and reaching well above vertex, about 3 times as long as broad, with ventral plaque about 0·75 length of scape; pedicellus plus flagellum about 2·3 times breadth of mesoscutum; pedicellus about 2·5 times as long as broad, slightly shorter than F1; flagellum proximally hardly stouter than pedicellus, tapering very slightly distad; funicular segments subequal in length, each 2·5–3·0 times as long as broad; clava not broader than F4, nearly 6 times as long as broad, as long as F3 plus F4, pointed; C1 and C2 each about twice as long as broad, separated by a distinct constriction, C3 shorter, spine about 0·33 length of C3; sensilla sparse, grouped irregularly in distal half of each segment; whorled setae of each funicular segment reaching slightly beyond its tip; first claval segment with two partial whorls of similar setae. Gaster oval, nearly as long and as broad as thorax; with a ventral plica. Genitalia (Fig. 553).

MATERIAL EXAMINED

1 ♂, 3 ♀. **Cyprus**: 1 ♀, Limassol, 20.xii.1939 (*Mavromoustakis*) (BMNH). **France**: 1 ♀, Vaucluse, Roussillon, 29.vii.1975 (*Graham*) (BMNH). **Spain**: 1 ♀, Prov. Toledo, Toledo, 21.x.1978 (*Bouček*) (BMNH). **Algeria**: 1 ♂, Oran, 5.v.1960 (*J. Barbier*) (MNHN).

Also recorded from several localities in **Italy** (Domenichini, 1967).

HOST. *Dasiops latifrons* (Meigen) on the grass *Cynodon dactylon*.

Neotrichoporoides brevicosta sp. n.

(Figs 94, 105)

♀. Differs from that of *cavigena* as follows. Forewing (Fig. 94) with *M* not longer than the costal cell and about 5·5 times length of *ST*. Malar fovea not quite so large. Antenna with scape virtually reaching level of vertex; F2 2·7–2·8 times, F3 2·1–2·3 times, as long as broad; clava 3·0–3·5 times as long as broad. Scutellum as broad as long; submedian lines a little nearer to sublaterals than to each other, enclosed space 2·7–2·8 times as long as broad; 6 setae present, there being an extra pair between the usual ones (this may be an abnormality; but see description of ♂). Propodeal callus with 4–6 setae. Forewing about 2·4 times as long as broad; costal cell 12·5 times as long as broad; *SM* with 5–6 dorsal setae. Gaster 1·55–1·80 times as long as broad. Body bronze with greenish reflections in places, especially on head; mouth edge testaceous. Antennal scape testaceous proximally. Femora at most slightly brownish in basal half. Length 1·90–2·25 mm.

♂. Differs from that of *cavigena* as follows: Forewing: *M* approximately as long as costal cell, 4·7 times length of *ST*. Submedian lines of scutellum enclosing a space about 2·8 times as long as broad; scutellum with 6 setae. Body rather more robust, bronze with greenish reflections on parts of head, thoracic dorsum, and base of gaster; femora not infuscate, though testaceous to brownish in basal half; tibiae yellow. Length 1·5 mm. Antenna (Fig. 105).

MATERIAL EXAMINED

2 ♂, 2 ♀. Holotype ♀, **Spain**: Prov. Malaga, Estepona, 29. or 30.vi.1974 (*Bouček*) (BMNH).
Paratypes. 2 ♂, 1 ♀, same data as holotype.

HOST. Unknown.

Neotrichoporoides rossilliensis sp. n.

(Fig. 99)

♀. Resembles *brevicosta* in having *M* not or hardly longer than costal cell, but differs as follows. POL about 1·2 OOL. Malar fovea oblong, nearly 3 times as long as broad and fully half as long as malar space. Antenna (Fig. 99) with pedicellus plus flagellum only about 1·3 times breadth of mesoscutum; pedicellus only slightly more than twice as long as broad; funicular segments slightly shorter, F1 2·5–2·7 times, F2 hardly 2·0 times, F3 about 1·5 times, as long as broad; clava about 3 times as long as broad. Thorax about 1·55 times as long as broad. Dorsellum hardly 2·5 times as broad as long, hind margin curved. Following parts of the body testaceous: lower half of head, inner and outer orbits, a large spot on each side of pronotum, prepectus, upper angle of mesopleuron broadly, hind edge of scapulae, inner angle of axillae, sides and hind edge of scutellum narrowly, and hind edge of metanotum. Dorsellum yellow. Length 2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Vaucluse, Roussillon, in a marshy place with much *Phragmites*, at the bottom of an ochre-quarry, 29.vii.1975 (*Graham*) (BMNH).

HOST. Unknown.

Neotrichoporoides erroneus sp. n.

♀. Differs from that of *rossilliensis* in the characters given in the key to females (p. 59). The testaceous parts of the body are also rather more extensive and include sides of mid lobe of mesoscutum, and the scutellum except the space between the submedian lines.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Czechoslovakia**: Slovakia, Čenkov nr Štúrovo, 8.viii.1958 (*J. Dlabola*) (BMNH).

HOST. Unknown.

Neotrichoporoides gordensis sp. n.

(Figs 92, 100, 110, 550)

♀. Head slightly broader than mesoscutum, about 2·2 times as broad as long; temples about 0·15 length of eyes; POL 1·0–1·2 OOL 2·0–2·5 OD. Eyes 1·3–1·4 times as long as broad, separated by slightly more than their length. Malar space 0·5 eye length; sulcus with triangular fovea extending half its length. Mouth 1·6 times malar space. Most setae of head very short and pale. Antenna (Fig. 100) with scape *ca* 0·75 length of eye, not reaching ocellus; pedicellus plus flagellum 1·25–1·35 breadth of mesoscutum; pedicellus 2·35–2·60 times as long as broad, not or only very slightly shorter than F1; funicle slender, proximally not stouter than pedicellus, thickening a little distad, its segments decreasing gradually in length, F1 2·70–3·70, F2 1·75–2·50, F3 1·40–2·00 times as long as broad; clava slightly broader than F3, 2·35–2·70 times as long as broad, distinctly longer than F3 but not as long as F2 plus F3, bluntly pointed, its first segment occupying nearly half the total length and about 1·5 times as long as broad, second shorter and slightly transverse, third still shorter; spine slender, fully half length of third segment, apical seta about 0·6 length of spine; sensilla moderately numerous, in two rows on segments of funicle and C1, uniseriate on C2 and C3, rather short, decumbent with tips projecting slightly. Thorax (Fig. 92) rather weakly arched, propodeal slope 25°–35°. Pronotum 0·65–0·80 length of mesoscutum, hind margin evenly curved. Mid lobe of mesoscutum 1·1–1·6 times as broad as long, weakly convex, moderately shiny, with excessively fine, lightly-engraved reticulation, areoles mostly 3–4 times as long as broad, some shorter; 3–5 weak pale adnotaular setae on each side, anterior seta very short, the rest lengthening, hindmost as long as scutellar setae. Scutellum almost or quite as long as mesoscutum, about 1·2 times as broad as long, weakly convex in long axis; moderately shiny, sculptured as mesoscutum; lines fairly distinct, submedians slightly nearer to sublaterals than to each other, tending to curve slightly inwards at their hind ends, enclosing a space 2·2–2·5 times as long as broad; anterior setae only about half as long as distance between submedian lines, placed slightly before middle, about equidistant from submedian and sublateral lines, or nearer to the submedians; posterior setae slightly longer, near to submedian lines. Dorsellum with hind edge obtusely angulate, 2·5–2·7 times as broad as long. Propodeum slightly longer than dorsellum, moderately shiny, reticulation very fine, superficial or hardly raised; median carina distinctly raised, thin in basal half but expanding slightly posteriorly; spiracles small, suboval, slightly less than their length from metanotum; callus with 3–4 setae. Legs of medium length; hind coxae oblique, about twice as long as broad, hind edge strongly curved, surface shiny; hind femora about 3 times as long as broad; spur of mid tibia 0·55 length of basitarsus, fourth tarsomere as long as basitarsus. Forewing 2·6–2·9 times as long as broad; costal cell much shorter than *M*, 12–15 times as long as broad; *SM* with 3–4 dorsal setae; *M* thin distally but thickening gradually basad, 6·6–7·6 times length of *ST*, its front edge with 9–12 setae; *ST* at *ca* 45°, thin proximally but soon expanding to form a small oblong stigma; *PM* rudimentary or a short stub; speculum variable, from very small to moderate-sized, hardly extended below *M*, closed or partly open; subcubital line of setae ending somewhat distad of distal edge of speculum; wing moderately thickly pilose with short setae; cilia 0·4–0·7 length of *ST*. Hindwing subobtuse or bluntly pointed; cilia 0·25–0·35 breadth of wing. Gaster ovate, acute but hardly acuminate, as long as or slightly longer than head plus thorax, usually a little broader than thorax, 1·6–2·0 times as long as broad; last tergite 1·3–1·5 times as broad as long; longest cercal seta about twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Colour variable, but usually extensively yellowish. Yellow or yellowish testaceous, non-metallic, or with weak greenish tinge visible in dark specimens; the following parts fuscous to black: mandibular teeth, ocelli, sometimes whole ocellar triangle and a large spot on occipital surface; pedicellus proximally, often also dorsally, flagellum excluding anelli, a small spot on sides of pronotum just above each spiracle, propodeum medially or wholly, sometimes spots at front of mid lobe of mesoscutum and of scapulae, and on axillae, most or all of last tergite, usually also the preceding tergite or two tergites, metapleuron sometimes more or less, hind coxae usually infuscate basally, pretarsi blackish, fourth tarsomere sometimes brownish. Wings hyaline or weakly yellowish tinged, venation yellow to testaceous.

The presumed British ♀ is darker: head fuscous except near mouth edge, and inner orbits partly; middle third of pronotum fuscous; mid lobe of mesoscutum fuscous with 2 large yellowish marks at the anterior angles; scapulae, axillae, scutellum and metanotum mainly fuscous; gaster rather more extensively infuscate; hind coxae mainly blackish. A ♀ from Czechoslovakia is also dark. A ♀ from France (Jura) is still darker, the body fuscous, with distinct greenish tinge on head and thorax, only the following parts testaceous: face below toruli, lower part of genae, sides of pronotum, also a pair of sublateral posterior spots and a median anterior mark; prepectus, upper angle of mesopleuron; a large spot occupying most of basal third of gaster, also gaster ventrally over nearly its basal half. Length 1·60–1·85 mm.

♂. Antenna (Fig. 110) with scape as long as eye, reaching above vertex, fully 3 times as long as broad, its ventral plaque occupying about 0·66 length of scape; pedicellus plus flagellum 2·5–2·8 times breadth of mesoscutum; pedicellus about twice as long as broad, much shorter than F1; flagellum very slender, proximally only just as stout as pedicellus, tending to taper a little distad; F1 very slightly shorter than the others, 2·5–3·0 times as long as broad, following segments subequal or decreasing very slightly, 3·0–4·0 times as long as broad; clava hardly as broad as F4, 7–11 times as long as broad, its first segment occupying fully one-third the total length and about 3 times as long as broad, second and third progressively shorter. Genitalia (Fig. 550).

Colour range as in ♀, but gaster often more extensively infuscate, sometimes wholly so except a subbasal spot, whilst forms darker than any ♀ occur; in the darkest ♂ the body is blackish with metallic tint, only the following parts testaceous: mouth edge, orbits, spots on pronotum, prosternum, prepectus, upper angle of mesopleuron. Antennal scape usually yellowish with plaque dark, in dark forms infuscate dorsally. Length 1·2–1·5 mm.

MATERIAL EXAMINED

5 ♂, 15 ♀. Holotype ♀, **France**: Vaucluse, near Gordes, 26.vii.1975 (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Bohemia, Praha-Děvín, 30.v.1946 (*Dlabola*) (BMNH); 1 ♀, Moravia, Čejč, vi.1941 (*A. Hoffer*) (BMNH); 1 ♀, Slovakia, Banská Štiavnica, 20.vi.1952 (*Bouček*) (BMNH). **France**: 1 ♀, Aisne, Chamouille, 4.vii.1974 (*Gijswijt*) (MJG); 1 ♀, Alpes de Haute Provence, Chateau-Arnoux, 10.viii.1972 (*Bouček*); 1 ♀, Aveyron, bridge over R. Arre, 27.vii.1974 (*Graham*) (BMNH); 1 ♀, Bouches du Rhône, Bois de Valfère, near Rognes, 1.viii.1975 (*Graham*) (BMNH); 1 ♀, Dordogne, E. of Les Eyzies, 6.viii.1974 (*Graham*) (BMNH); 1 ♀, Jura, Vaux les St Claude, 11.vii.1971 (*Gijswijt*) (MJG); 1 ♂, Seine et Marne, Forêt de Fontainebleau, Mont Ussy, 29.vi.1976, 1 ♀, 30.vi.1976; 1 ♂, 3 ♀, Vaucluse, near Gordes, 26.vii.1975; 1 ♂, Dentelles de Montmirail, 15.vii.1974; 1 ♂, 1 ♀, Malaucène, 24.vii.1974; 1 ♂, Roussillon, 29.vii.1975 (*Graham*) (BMNH).

Non-paratypic material. **Great Britain**: 1 ♀, unlocalized (*J. C. Dale*) (UM).

HOSTS. Unknown. The species occurs amongst coarse grasses and most probably has some dipterous host upon one or more grass species.

SIGMOPHORA Rondani

Sigmophora Rondani, 1867*b*: 40. Type-species: *Sigmophora scrophulariella* Rondani, by monotypy.

Lopodytes Rondani, 1867*a*: 8. Type-species: *Lopodytes prunicola* Rondani, by monotypy. [Homonym of *Lopodytes* Stål, 1853.] [Synonymized by Graham, 1985*a*: 160.]

[*Lopodites* Rondani, 1877*a*: 184. Typographical error.]

Eulophotetrastichus Girault, 1913*b*: 70. Type-species: *Eulophotetrastchus io* Girault, by original designation and monotypy. [Synonymized by Graham, 1985*a*: 160.]

Lopodytiscus Ghesquière, 1946: 370. [Replacement name for *Lopodytes* Rondani.] [Synonymized by Graham, 1985*a*: 160.]

DIAGNOSIS. Vertex (Fig. 37) with a transverse carina behind lateral ocelli and extending to near eyes, often a second carina traversing ocellar triangle; head usually not collapsing after death. First segment of mid and hind tarsi (Fig. 73) very slightly to somewhat shorter than second segment. Genitalia of ♂ (Figs 557, 558) very elongate, 8–14 times as long as broad. Antenna of ♀ with 3 subdiscoid anelli (Fig. 694), 3 funicular and 3 claval segments. Antenna of ♂ with 2 anelli and 4 funicular segments; ventral plaque of scape extending most of its length; segments of flagellum with compact subbasal whorls of long dark setae. Malar sulcus often with a triangular or oblong fovea (Fig. 72) below eye. Scapular flanges elongate-triangular, scapulae rather less deeply excised than in *Aprostocetus*. Mesosternum flat or even very slightly concave in the longitudinal axis. Body non-metallic, usually black and yellow, rarely wholly black.

HOSTS. Diptera: Cecidomyiidae, especially the genus *Asphondylia*.

COMMENTS. *Sigmophora* is known from all continents of the Old World but I have not so far seen material from the New World.

The transverse carinae of the vertex distinguish this genus from all others.

Key to European species

1 Mid lobe of mesoscutum (Fig. 37) with 1 row (sometimes irregular or partly double in ♀) of reclinate setae on each side, the posterior setae longer; all tending to be dark. Submedian lines of scutellum distinct. Median carina of propodeum (Fig. 71) with a triangular basal fovea (indistinct in small specimens); callus usually with 2 setae, occasionally 3. First segment of mid and hind tarsi (Fig. 73) slightly shorter than second. Forewing (Fig. 74) with marginal vein 6–7 times length of stigmal vein. Hind coxa with curved dorsolateral carina extending over about basal third. Fovea of malar sulcus (Fig. 72) at most slightly longer than broad .... ***brevicornis*** (p. 77)

– Mid lobe of mesoscutum (Fig. 77) with 3–4 rows of short subdecumbent white adnotaular setae, plus one long dark seta in each hind corner. Submedian lines of scutellum obsolescent. Median carina of propodeum not foveate; callus with 3–8 setae. First segment of mid and hind tarsi distinctly shorter than second. Forewing with marginal vein at most 5·3 times length of stigmal. Hind coxa without dorsal carina. Fovea of malar sulcus more elongate .... ***italica*** (p. 79)

Sigmophora brevicornis (Panzer)

(Figs 37, 72, 75, 76, 557, 671, 694)

[Cynips prima. Erste gallapfelfliege; Schaeffer, 1766, pl. 134, figs 4a, 4b. Name not binominal.]
Cynips brevicornis Panzer *in* Schaeffer, 1804: 134. ? Syntypes ♀, ? GERMANY (not located).
Cinips quercus ramuli F. ?; Fonscolombe, 1832: 296.
Cirrospilus Armaeus Walker, 1838: 200. Lectotype ♀, GREAT BRITAIN (BMNH), designated by Graham (1961*a*: 45) [examined]. [Synonymized by Graham, 1961*a*: 45.]
Cirrospilus Zeuxo Walker, 1839: 194. Lectotype ♀, FRANCE (BMNH), designated by Graham (1961*a*: 45) [examined]. [Synonymized by Domenichini, 1966*a*: 146.]
Eulophus setiseries Förster, 1841: 41. Lectotype ♀, GERMANY (NM), designated by Domenichini, 1966*a*: 147 [not examined]. [Synonymized by Szelényi, 1941: 403.]
Eulophus verbasci Dufour, 1846: 20. Syntypes, FRANCE (not located). [Synonymized with *Aprostocetus zeuxo* (Walker) by Graham, 1961*a*: 45.]
Lopodytes asphondyliae Rondani, 1867*a*: 9. Lectotype ♂, ITALY (Haliday coll., NMI), designated by Graham (1985*a*: 160) [examined].
Lopodytes prunicola Rondani, 1867*b*: 39–40. [Unnecessary replacement name for *asphondyliae* Rondani). [Synonymized with *Tetrastichus brevicornis* (Panzer) by Szelényi, 1941: 403.]
Sigmophora scrophulariella Rondani, 1867*b*: 40. Lectotype ♀, ITALY (Haliday coll., NMI), designated by Graham (1985*a*: 160) [examined]. [Synonymized by Bouček, 1974: 265.]
Geniocerus flavovarius (Nees); Kurdjumov, 1913: 248, in part. Misidentification.]
Tetrastichus brevicornis (Panzer) Szelényi, 1941: 403.
Geniocerus brevicornis (Panzer) Erdös, 1954: 354.
Aprostocetus brevicornis (Panzer) Graham, 1961*a*: 45.
Tetrastichus brevicornis (Panzer) Domenichini, 1966*a*: 146; 1966*b*: 20; Kostjukov, 1978*b*: 443.

Graham (1985*a*: 160) has confirmed the synonymy of *Lopodytes asphondyliae* Rondani, *Lopodytes prunicola* Rondani, and *Sigmophora scrophulariella* Rondani with *Sigmophora brevicornis* Panzer after examining Rondani's material. Szelényi (1941: 403) incorrectly synonymized *Tetrastichus varius* Thomson, 1878 with *T. brevicornis* (Panzer). *T. varius*, however, is a synonym of *Aprostocetus citrinus* (Förster). A detailed redescription is given, as there appear to be a number of closely-allied species in this genus.

♀. Head nearly or just as broad as mesoscutum, 2·3–2·5 times as broad as long; temples extremely short; vertex with a transverse carina a little behind the lateral ocelli, extending laterally slightly beyond them but not reaching the eyes; a second transverse carina crosses the ocellar triangle immediately behind the median ocellus; POL 1·5–2·0 OOL; OOL 1·5–2·0 times OD. Eyes 1·25–1·30 times as long as broad, separated by about 1·5 times their length, with sparse, extremely short pubescence. Malar space (Fig. 72) about 0·66 length of eye, with a large triangular fovea below eye, extending more than one-third the malar space, the bottom of the fovea coriaceus and dull. Mouth hardly greater than malar space. Antenna (Fig. 75) with scape slightly shorter than an eye, 4·1–4·5 times as long as broad, reaching level of vertex; pedicellus plus flagellum about equal to breadth of mesoscutum in larger ♀ but up to 1·2 times breadth in small ♀; pedicellus 2·0–2·2 times as long as broad, 0·6–0·8 length of F1; anelli (Fig. 694) rather distinct; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing in length, F1 1·7–2·5 times, F2 1·5–2·0 times, F3 1·0–1·6 times, as long as broad; clava slightly broader than F3, 2·2–2·7 times as long as broad, obtuse, C1 occupying nearly half the total length and as long as broad or slightly transverse, C2 slightly shorter and transverse, C3 still shorter, spine rather thick, about 0·33 length of C3, its apical seta as long as or slightly longer than the spine; sensilla moderately numerous, in one irregular row or (usually) two rows on each segment, moderately long, most with their distal half forming a slightly projecting blade, a few decumbent. Thorax (Fig. 37) about 1·5 times as long as broad; propodeal slope about 60°. Pronotum short, crescentic, with hind margin deeply excised. Mid lobe of mesoscutum about as long as broad, moderately convex, somewhat dull; anterior quarter with fine, slightly raised reticulation formed of almost isodiametric areoles, rest of surface with extremely fine hardly raised reticulation with areoles mostly longer than broad; median line absent, occasionally represented by a very shallow impression; a little mesad of each notaulus there is a shallow longitudinal furrow, in which is placed a single or partly double row of (5–)6–14 dark adnotaular setae which arise from small tubercles, the anterior setae very short but the others tending to increase slightly in length, the hindmost seta as long as the scutellar setae. Outer half of scapulae with numerous short pale setae and a longer dark seta near the middle of their hind margin. Scutellum about 0·6 length of mesoscutum, rather weakly convex in profile, only slightly broader than long, with excessively fine engraved reticulation composed of elongate areoles; submedian lines distinct, fully twice as far from each other as from sublateral lines, enclosing a space about twice as long as broad; setae moderately long but their length distinctly less than distance between submedian lines, anterior pair in or even slightly before the middle; hind edge of scutellum with a relatively broad thin flange which usually has some longitudinal costulae. Dorsellum subrectangular with hind edge weakly curved, 2·5–3·0 times as broad as long. Propodeum medially as long as, or up to 1·5 times as long as, the dorsellum, moderately shiny, with fine slightly raised reticulation having nearly isodiametric areoles; median carina raised and sharp, with a triangular basal fovea (indistinct in small specimens); spiracles moderate-sized, suboval, close to metanotum, their outer edge partly covered by a raised flap of the callus, this flap continued caudad as a sharp flange to the hind corner of the propodeum; callus with 2 setae, one outside the spiracle and another nearer hind corner of propodeum. Mesosternum flat or even very slightly concave. Legs of medium length but rather slender; hind coxae about 2·5 times as long as broad, shiny, with fine hardly raised reticulation, their dorsal edge strongly curved and with a longitudinal carina; femora rather slender, hind pair about 5 times as long as broad; spur of mid tibia (Fig. 73) slightly longer than basitarsus, fourth tarsomere virtually as long as basitarsus; basitarsus of mid and hind tarsi slightly shorter than second segment. Forewing 2·10–2·25 times as long as broad, reaching slightly beyond tip of gaster; costal cell (Fig. 74) 9–10 times as long as broad, obviously shorter than *M*; *SM* with 4–6 dorsal setae; *M* moderately thick proximally but tapering slightly distad, 6·0–7·0 times length of *ST*, its front edge with 13–22 setae; *PM* rudimentary; *ST* at 45°–50° angle, thin proximally but gradually expanding to form a subtriangular stigma; speculum not large, hardly extending beyond distal end of parastigma, closed below; wing beyond it thickly pilose, very thickly distad, the pilosity extending up close to *M*; cilia 0·15–0·33 length of *ST*. Hindwing obtuse or rounded, cilia 0·15–0·20 breadth of wing. Gaster ovate to sublanceolate, slightly longer than head plus thorax, usually about as broad as thorax but sometimes slightly narrower, acute and usually slightly acuminate, 1·8–2·5 times as long as broad; last tergite from slightly shorter than, to as long as, its basal breadth; ovipositor sheaths slightly exserted; longest seta of each cercus about 1·7 length of next longest; tip of hypopygium a little before middle of length of gaster. Hypopygium (Fig. 671).

Colour very variable. Average specimens from northern Europe have a roughly equal extent of tan and black colour on the body but in central and particularly southern Europe the yellow or tan colour tends to predominate; whilst in ♀ from Pakistan the body may be yellow with only the ovipositor sheaths, and some setae of the thorax and gaster, black. On the other hand, some from Scotland and Ireland are mainly or even entirely black. One ♀ from Denmark; Rold Forest, 18.viii.1979, is wholly black and is further exceptional in having infuscate femora. In British specimens the following parts are usually yellowish: upper angle of mesopleuron, dorsellum, orbits more or less, sides and hind margin of mesoscutum, hind margin of scapulae, scutellum between the sublateral lines (except usually a median spot of variable size); the extreme base of the gaster ventrally may be yellowish. In progressively paler forms yellow colour appears on sides of pronotum and the prepectus, whilst the yellow of the orbits spreads over the face and then the whole lower part of the head, and the vertex. In dark British specimens all coxae are black, the femora are more or less infuscate, sometimes also the hind tibiae, less often the mid tibiae. More often all femora and tibiae are yellow, whilst in pale forms the coxae are yellowish apically. Tegulae usually yellow, in dark forms partly infuscate, rarely wholly black. Wings usually slightly yellowish-tinged, venation yellowish to brown. Length 1·35–2·60 mm.

♂. Ocelli large, OOL about 1·25 OD. Antenna (Fig. 76) with scape nearly as long as an eye, reaching above vertex, 3·0–3·5 times as long as broad, with ventral plaque extending from somewhat above the base to near the apex; pedicellus plus flagellum 1·7–1·8 times breadth of meoscutum; pedicellus 1·7–1·8 times as long as broad, about 0·66 length of F1; funicle slender, proximally a little stouter than pedicellus, tapering very slightly distad; F1 distinctly shorter than F2, 2·0–2·2 times as long as broad, following segments subequal in length, each about 3 times as long as broad; clava hardly broader than F4, 6·0–6·5 times as long as broad, about as long as F3 plus F4, with C1 and C2 subequal in length, each 2·0–2·3 times as long as broad, C3 shorter; whorled setae moderately long, those of F1 reaching slightly beyond tip of F2; C1 with a similar whorl of setae. Gaster oblong, as long as but much narrower than thorax, with ventral plica. Genitalia (Fig. 557) slightly more than half as long as gaster, and about 8 times as long as broad; digitus about 1·5 times as long as broad.

MATERIAL EXAMINED

Many ♂, ♀. **Andorra**, **Czechoslovakia**, **Denmark**, **Finland**, **France**, **Germany**, **Great Britain**, **Greece**, **Hungary**, **India**, **Ireland**, **Israel**, **Italy**, **Morocco**, **Norway**, **Pakistan**, **Portugal**, **Spain**, **Sweden**, **U.S.S.R.**, **Yugoslavia.**

HOSTS. *Asphondylia calycotomae* Kieffer, *A. coronillae* Vallot, *A. cytisi* Frauenfeld, *A. dufouri* Kieffer, *A. ervi* Rübsaamen, *A. melanopus* Kieffer, *A. mikii* Wachtl, *A. ononidis* F. Löw, *A. ulicis* Verrall, *A. verbasci* Vallot, *Contarinia lentis* Aczel, *C. medicaginis* Kieffer, *Eumarchalia gennadii* Marchal, *Kiefferia pericarpiicola* (Bremi) (= *pimpinellae* F. Löw), *Schizomyia galiorum* Kieffer. *Sigmophora brevicornis* is a gregarious ectophagous parasite of the larvae and pupae of Cecidomyiidae. The biology has been described by Parker & Thompson (1928) under the name *Oxymorpha intermedia* (Thomson).

Sigmophora italica (Domenichini)

(Figs 77, 78, 558)

Tetrastichus italicus Domenichini, 1967: 92; Bouček, 1977*b*: 17; Kostjukov, 1978*b*: 443. Holotype ♀, ITALY: ? Capo Mimosa, 14.v.1962, from galls of *Asphondylia dorycnii* F. Löw on *Dorycnium pentaphyllum* v. *fruticosum* (MIZSU) [not examined].
Sigmophora italica (Domenichini) Graham, 1985*a*: 161.

♀. Head as broad as or slightly broader than mesoscutum. Malar fovea longer and more narrowly triangular, extending 0·50–0·66 length of malar space. Antenna with pedicellus plus flagellum 1·25–1·30 times breadth of mesoscutum; pedicellus about 0·66 length of F1; funicle proximally not stouter than pedicellus; funicular segments relatively longer, F1 3·7–4·1 times, F2 2·0–2·1 times, F3 1·5–1·6 times as long as broad; clava 2·5–3·5 times as long as broad, tending to be more pointed than in *brevicornis*. Pronotum with setae scattered over its whole surface except just at the sides. Mid lobe of mesoscutum (Fig. 77) with 3–5 rows of setae on each side, these setae all short, decumbent and pale or whitish, except the hindmost seta of the outer row which is dark and as long as the scutellar setae. Outer half of each scapula thickly clothed with short pale setae. Submedian lines of scutellum absent, or very vaguely indicated. Dorsellum about twice as broad as long. Propodeum with median carina not foveate; callus without longitudinal flange, with a row of 3–8 setae. Hind coxae without a dorsal carina; spur of mid tibia hardly as long as basitarsus. Forewing 2·25–2·40 times as long as broad; upper surface of costal cell sometimes with 1–4 setae near its apex; *M* 5·2–6·0 times length of *ST*, its front edge with 11–14 setae. For other characters see Domenichini (1967).

Colour very variable. At one extreme mainly black specimens occur, or those having restricted yellow markings; the figure given by Domenichini (1967: pl. 2) illustrates such a form. In paler forms the extent of yellow and tan upon the head and thorax increases, though the gaster may remain black with paired yellow spots, or transverse bands, upon each segment. In the palest forms only the ocellar triangle, a transverse mark above the foramen magnum, small spots at the prothoracic spiracle and near the articulation of the forewing, and the ovipositor sheaths, remain black. The front portions of the mid lobe of mesoscutum, of the scapulae and of the axillae, may be tan-coloured; whilst the gaster usually retains traces of dark markings in the form of fuscous or tan transverse bands. The legs vary in colour much as in *brevicornis*. Length 1·7–2·5 mm.

♂. Antenna (Fig. 78) with scape as long as an eye and reaching slightly above vertex, flattened, 3·1–3·3 times as long as broad, with ventral plaque much as in *brevicornis*; pedicellus plus flagellum about twice breadth of mesoscutum; pedicellus twice as long as broad and about 0·66 length of F1; funicle very slender, but proximally very slightly stouter than pedicellus, tapering slightly distad; F1 somewhat shorter than F2 and about 2·5 times as long as broad; following segments subequal in length, each about 4 times as long as broad; clava about 6 times as long as broad, somewhat shorter than F3 plus F4, with a constriction between C1 and C2; C1 about 3 times as long as broad, C2 slightly shorter and about twice as long as broad, C3 still shorter and about 1·5 times as long as broad; whorled setae slightly shorter than in *brevicornis*, those of F1 hardly reaching tip of F2; C1 with a similar half-whorl dorsally and a rudimentary half-whorl ventrally, C2 with a rudimentary ventral half-whorl. Gaster oval, about as long but somewhat narrower than thorax, with ventral plica. Genitalia (Fig. 558) 9·0–9·5 times as long as broad.

Colour variation much as in ♀.

MATERIAL EXAMINED

3 ♂, 20 ♀. **France**, **Italy**, **Spain**, **Yugoslavia**.

HOST. *Asphondylia dorycnii* F. Löw.

KOLOPTERNA gen. n.

Type-species: *Koloptena salina* sp. n. Gender: feminine.

DIAGNOSIS. First segment of mid and hind tarsi (Figs 38, 39) much shorter than second segment. Forewing (Figs 79, 80) with *M* shorter than or at most as long as costal cell. Antenna of ♀ (Fig. 82) with 3 anelli, the first two discoid, the third large and quadrate or only slightly transverse, usually with a few setae; funicle and clava each with 3 segments. Antenna of ♂ (Fig. 83) with ventral plaque of scape placed in upper half; 2 anelli, 4 funicular segments and 3 claval segments, flagellar segments with compact subbasal whorls of long dark setae. Malar sulcus (Fig. 40) with oblong or sublinear fovea below eye. Genitalia of ♂ (Figs 559, 560) very elongate, as in *Sigmophora*. Body non-metallic, black and yellow or mainly yellow. Other features as in *Aprostocetus*.

HOSTS. Unknown.

COMMENTS. This genus is known only from Europe and Pakistan. It differs from all others known to me in the very short basitarsus of the mid and hind tarsi. In other respects it shows few primitive but a number of derived character-states.

Keys to species of *Kolopterna*

Females

1 Forewing (Fig. 79) with apical margin, at least between *PM* and apical apex of wing, bare; basal vein bare, speculum open below and continued as a broad bare strip below *M* to somewhat beyond *ST*; distal part of wing rather sparsely clothed with short setae. Body almost wholly yellow .... ***kohatensis*** (p. 82)

– Forewing (Fig. 80) with apical margin ciliate throughout; basal vein pilose; speculum closed below, continued as a narrow bare wedge only as far as *ST*; distal part of wing moderately thickly pilose, with longer setae. Body either mainly testaceous, or extensively black-marked 2

2 Antenna (Fig. 82) with scape as long as or slightly longer than an eye, reaching level of vertex or slightly above it; pedicellus plus flagellum 1·4–1·5 times breadth of mesoscutum; funicular segments longer, F1 4·7–5·0 times, F2 2·5–3·0 times, F3 1·9–2·0 times as long as broad. Mesoscutum and scutellum rather dull. Body testaceous or yellowish with a few dark markings on head and thorax, usually with fuscous bands on gastral tergites .... ***salina*** (p. 81)

– Antenna with scape 0·87–0·92 length of eye, not reaching median ocellus; pedicellus plus flagellum 1·20–1·35 times breadth of mesoscutum; funicular segments shorter, F1 3·2–3·5 times, F2 2·1–2·5 times, F3 1·7–1·9 times as long as broad. Mesoscutum and scutellum moderately shiny. Head and thorax yellow with extensive black markings, gaster tending to be mainly black .... ***quartensis*** (p. 83)

Males

1 Forewing with apical margin ciliate throughout; basal vein pilose; speculum closed below, continued as a narrow bare wedge-shaped strip below *M* but reaching only as far as *ST*. Mesoscutum and scutellum moderately shiny. Body black with restricted yellowish markings on head and thorax. Antenna (Fig. 83) .... ***quartensis*** (p. 83)

– Forewing with apical margin, between *PM* and apex or even farther, bare; basal vein bare; speculum open below and continued as a broad bare strip below *M* to somewhat beyond *ST*. Mesoscutum and scutellum relatively dull. Body varying from mainly black to nearly wholly yellow 2

2 Antenna with pedicellus plus flagellum about 1·7 times breadth of mesoscutum. Body mainly yellow, with very restricted dark markings (Pakistan) .... ***kohatensis*** (p. 82)

– Antenna with pedicellus plus flagellum 1·9–2·0 times breadth of mesoscutum. Body black with restricted yellow markings (Greece) .... ***K.***sp. (p. 82)

***Kolopterna salina* sp. n.**

(Figs 39, 40, 81, 82, 669)

♀. Head about as broad as mesoscutum, 2·3–2·4 times as broad as long; temples about 0·15 length of eyes; POL 1·4–1·7 OOL; OOL 2·5–3·0 times OD. Eyes 1·15–1·20 times as long as broad, separated by 1·3–1·4 times their length. Malar space about 0·7 length of eye; fovea (Fig. 40) sublinear, extending about or slightly more than half length of gena. Setae of head pale, length of those on vertex slightly less than OD. Antenna (Fig. 82) with scape as long as or slightly longer than eye, reaching level of vertex or slightly above it; pedicellus plus flagellum 1·4–1·5 times breadth of mesoscutum; pedicellus about 2·5 times as long as broad, slightly more than half as long as F1; first and second anelli subequal, each nearly 3 times as broad as long, third subquadrate, pilose; funicle very slender, proximally more slender than pedicellus, thickening slightly distad, its segments decreasing rapidly in length, F1 4·7–5·0 times, F2 2·5–3·0 times, F3 1·9–2·0 times as long as broad; clava somewhat broader than F3, 2·9–3·1 times as long as broad, distinctly shorter than F2 plus F3, obtuse, C1 slightly longer than broad, C2 ad C3 progressively shorter, spine about 0·25 length of C3, with apical seta as long as spine; sensilla uniseriate, sparse on funicle, more numerous on clava, moderately long, decumbent with tips projecting slightly. Thorax 1·3–1·4 times as long as broad; propodeal slope *ca* 50°. Pronotum fully one-quarter as long as mesoscutum, broadly bare medially but clothed with pale setae laterally. Mid lobe of mesoscutum (Fig. 81) slightly broader than long, relatively dull, with fine, superficial or very slightly raised reticulation having most of its areoles hardly longer than broad; median line absent; 2–3 rows of adnotaular setae on each side, pale and decumbent, short (even the hindmost seta). Scutellum about 0·7 length of mesoscutum, 1·4–1·5 times as broad as long, sculptured as mesoscutum but more finely; submedian lines weak, distinctly nearer to sublateral lines than to each other; setae pale and weak, anterior pair hardly longer than hindmost adnotaular seta, placed in or hardly before the middle, posterior pair twice as long as anteriors though still relatively short. Dorsellum as in *Sigmophora brevicornis*. Propodeum shallowly and narrowly emarginate, medially fully as long as, or slightly longer than, the dorsellum; median carina fine, not foveate, expanding slightly posteriorly; surface with fine though rather strong and slightly raised isodiametric reticulation; callus with 3–7 setae. Prepectus dull, with extremely fine, very slightly raised reticulation. Legs of medium length, hind coxae oblique, about twice as long as broad, sculptured like propodeum; hind femora somewhat more than 4 times as long as broad; spur of mid tibia approximately as long as basitarsus, tibiae slender; basitarsus of mid and hind tarsi (Fig. 39) only about half as long as second tarsomere, fourth segment only slightly shorter than basitarsus. Forewing (Fig. 80) about 2·4 times as long as broad; costal cell as long as or very lightly longer than *M*, 12–15 times as long as broad; *SM* with 3–5 dorsal setae; *M* somewhat thick proximally but tapering distad, its front edge with 8–11 rather short setae, 6–8 times length of *ST*; *ST* at 45°, rather thick, with subsessile stigma; speculum rather narrow but extending as a broad strip below *M* and reaching *ST*, interrupted medially by only a few setae, closed below; wing beyond it rather thickly pilose; cilia 0·5–0·7 length of *ST*. Hindwing rounded; cilia 0·20–0·25 breadth of wing. Gaster lanceolate, about twice as long as thorax, as broad as thorax, acute and slightly acuminate, 2·3–3·0 times as long as broad; last tergite about as long as broad; ovipositor sheaths slightly projecting; cercal setae subequal in length, curved; tip of hypopygium at about 0·4 length of gaster. Hypopygium (Fig. 669).

Body testaceous; dorsellum and upper angle of mesopleuron yellow; orbits, hind margin of pronotum, sides of mesoscutum and hind part of scapulae, front part of scutellum, tending to be yellowish; a fuscous spot on each side of occiput above foramen magnum; a black dot above each prothoracic spiracle; a transverse fuscous band on the hind margin of each gastral segment except the last; ovipositor sheaths black. Antennal scape testaceous, infuscate distally; rest of antenna fuscous with tip of pedicellus sometimes paler. Legs including coxae testaceous; femora sometimes slightly infuscate dorsally; hind tibiae fuscous with bases and tips pale; mid tibiae with broad fuscous postmedian band; fourth tarsomere of all legs brownish, pretarsi fuscous. Tegulae yellowish testaceous. Wings slightly to strongly yellowish-tinged; venation testaceous. Length 2·0–2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Spain**: Alicante salines, 25.vi.1974 (Bouček) (BMNH).

Paratypes. 2 ♀, same data as holotype (BMNH).

HOSTS. Unknown.

Kolopterna kohatensis sp. n.

(Fig. 79)

♀. Head with POL 1·3 times OOL; OOL twice OD; other features as in *salina*. Antenna with scape equal in length to eye, not reaching level of vertex; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus 2·2 times as long as broad, slightly shorter than F1; F1 2·75 times, F2 twice, F3 about 1·5 times, as long as broad; clava 2·6 times as long as broad, equal in length to F2 plus F3; other features as in *salina*. Thorax slightly more squat than in *salina*. Hind femora not quite 4 times as long as broad. Forewing (Fig. 79) characteristic: costal cell about 1·7 times as long as *M* and about 10 times as long as broad; *SM* with 4 dorsal setae; *M* 3·3 times length of *ST*, its front edge with 8–9 setae; *ST* bare except for 1 seta in the middle of the stigma; *PM* nearly half as long as *ST*; whole basal part of wing virtually bare, to well beyond level of *ST*, beyond that rather sparsley pilose and with short setae; wing margin from *PM* to beyond apex without cilia. Gaster about 1·7 times as long as thorax and about 2·3 times as long as broad; tip of hypopygium at about 0·5 length of gaster; otherwise as in *salina*.

Colour yellow, with a fuscous dot above each prothoracic spiracle and a transverse fuscous band on the hind edge of each gastral tergite; tips of ovipositor sheaths fuscous. A pair of large spots on the front part of mid lobe of mesoscutum, and a small spot on the front of each scapula and axilla, are tan-coloured. Forewing lightly infumate. Length 1·5 mm.

♂. Antenna with scape 1·05 length of eye, almost reaching level of vertex, about 3·6 times as long as broad, with ventral plaque situated in upper half and 0·27 length of scape; pedicellus plus flagellum 1·7 times breadth of mesoscutum; pedicellus 1·7 times as long as broad, nearly as long as F1; funicle proximally slightly stouter than pedicellus, tapering a little distad; F1 somewhat shorter than F2, about 1·8 times as long as broad; following segments subequal in length, F2 2·2 times, F3 2·4 times, F4 nearly 2·5 times, as long as broad; clava hardly broader than F4, about 5 times as long as broad, slightly longer than F3 plus F4, with C1 and C2 subequal in length, each about twice as long as broad, C3 hardly shorter; whorled setae long, those of F1 reaching about level with tip of F3. Forewing as in ♀ but *PM* rudimentary. Gaster oblong-elliptic, about as long as but narrower than thorax, with ventral plica. Genitalia about half as long as gaster, 5·7 times as long as broad; digitus about twice as long as broad.

Colour as in ♀ but a fuscous spot on occipital surface just above foramen magnum, another in middle of front margin of pronotum; notauli, scuto-scutellar suture, sublateral lines of scutellum, front and hind margin of propodeum, blackish.

MATERIAL EXAMINED

1 ♂, 1 ♀. Holotype ♀, **Pakistan**: Kohat, reared 24.vii.1978 from leaf-galls on *Kochia* sp. (Chenopodiaceae) (CIBC No. 1645) (BMNH).

Paratype. 1 ♂, same data as holotype (BMNH).

HOST. Not determined.

Kolopterna sp.

♀. Unknown.

♂. Antenna as in *kohatensis* ♂ but with scape reaching slightly above level of vertex; pedicellus plus flagellum about 1·9–2·0 times breadth of mesoscutum; funicular segments tending to be slightly longer, F2

2·1–2·5 times, F3 2·0–2·8 times, F4 2·8–3·0 times, as long as broad; clava 6·1–6·6 times as long as broad. Forewing as in *kohatensis* but *M* 3·8–4·0 times length of *ST*. Genitalia (Fig. 559) about 12 times as long as broad; digitus about 1·5 times as long as broad.

Body black with the following parts yellowish: inner and outer orbits, face mainly, a large spot on each side of pronotum, sometimes joined on hind margin of the sclerite; a line on each side of mid lobe of mesoscutum, along the notaulus; sometimes hind edge of axillae; sides of scutellum; dorsellum; upper angle of mesopleuron. Legs testaceous with hind coxae fuscous proximally; all femora broadly infuscate proximally.

MATERIAL EXAMINED

2 ♂. **Greece**: Kikládes I., Santorini (Thira), 24.xi.–6.xii.1974 (*A. C. & W. N. Ellis*) (ITZ).

HOST. Unknown.

COMMENTS. This species is very close to the ♂ of *kohatensis* but the small structural differences and the dark colour of the body suggest that it may be distinct. A definite conclusion can only be reached if the ♀ is discovered.

***Kolopterna quartensis* sp. n.**

(Figs 38, 83, 560, 670)

♀. Antenna with scape 0·87–0·92 length of eye, not reaching median ocellus; pedicellus plus flagellum 1·20–1·35 times breadth of mesoscutum; F1 3·2–3·5 times, F2 2·1–2·5 times, F3 1·7–1·9 times as long as broad; other features as in *salina*. Thorax as in *salina* but with surfaces of mesoscutum, axillae and scutellum somewhat shiny and with more delicate sculpture. Prepectus with finer reticulation. Legs a little shorter and stouter than in *salina*; hind coxae shiny, with weaker, hardly raised reticulation; spur of mid tibia (Fig. 38) not quite as long as basitarsus. Gaster 2·1–2·5 times as long as broad, less than twice as long as thorax; tip of hypopygium at about 0·5 length of gaster. Hypopygium (Fig. 670).

Body black with the following parts yellow: head except ocellar triangle, most of occiput, and sometimes a median stripe on face and frons; pronotum except a dot above each spiracle and a large spot on the neck region which sometimes extends back nearly to the hind margin; prepectus; mesoscutum except a large spot on front part of mid lobe, sometimes extending to the hind margin, and a smaller spot on the front part of each scapula; scutellum except the sublateral lines and sometimes its sides outside them, sometimes also the space between submedian lines; dorsellum; usually the propodeal calli; upper angle of mesopleuron; a row of spots along each side of the gaster, sometimes also a medially-interrupted transverse band on some or all of the gastral tergites. Legs yellow with mid and hind coxae black, or black except apically, fore coxae sometimes black proximally; hind femora, sometimes all the femora, narrowly black proximally. Wings hyaline or slightly grey-tinged. Length 1·35–1·95 mm.

♂. Antenna (Fig. 83) with scape as long as or hardly longer than an eye, reaching level of vertex or even slightly above it, about 3·5 times as long as broad, with ventral plaque about 0·3 length of scape; pedicellus plus flagellum about twice breadth of mesoscutum; pedicellus about 1·8 times as long as broad, virtually as long as F1; funicle slightly stouter than pedicellus, filiform; F1 distinctly shorter than F2 and about 1·8 times as long as broad; following segments subequal in length, F2 about 2·5 times, F3 3·0 times, F4 2·8 times, as long as broad; clava nearly 6 times as long as broad, about as long as F3 plus F4, with C1 fully twice as long as broad, C2 slightly shorter and twice as long as broad, C3 about 0·6 length of C2; whorled setae very long, those of F1 reaching about half-way along F3, C1 with 2 partial whorls of setae. Gaster elliptic, as long as but slightly narrower than thorax, with ventral plica. Genitalia (Fig. 560) about 0·8 as long as gaster and about 11 times as long as broad.

Body black with the following parts yellow: inner orbits broadly, sides of face, genae on each side of malar sulcus, outer orbits narrowly; a large spot on each side of middle of pronotum, lateral margins of scapulae, a spot in each anterior angle of mid lobe of mesoscutum, and dorsellum. Length *ca* 1 mm.

MATERIAL EXAMINED

1 ♂, 7 ♀. Holotype ♀: **Italy**: Aosta, Quart, 13.ix.1969 (*Bouček*) (BMNH).

Paratypes. **Italy**: 1 ♂, 2 ♀, same data as holotype (BMNH); 3 ♀, Aosta, Sarre, 13.ix.1969 (*Bouček*) (BMNH), 1 ♀, 12.ix.1971 (*Bouček*) (BMNH).

HOST. Unknown.

ANAPROSTOCETUS gen. n.

Type-species: *Anaprostocetus dehraensis* sp. n. Gender: masculine.

Diagnosis. Propodeum (Fig. 42) as long as dorsellum, with sharp paraspiracular carinae, plicae absent; surface between paraspiracular carinae with strong, slightly raised reticulation. Hind coxa (Fig. 41) with a curved subdorsal carina on its outer surface. Antenna of ♀ (Fig. 84) with 3 discoid but not laminar anelli, of which the third tends to be slightly larger than the others; funicle and clava each with 3 segments. Antenna of ♂ (Fig. 85) with ventral plaque of scape placed in upper half; 2 discoid anelli; 4 funicular segments and a 3-segmented clava; segments of flagellum with compact subbasal whorls of long dark setae. Vertex (Fig. 43) having ocelli enclosed by an impressed line; just outside each lateral ocellus there is a shallow subtriangular fovea. Gaster of ♂ concave ventrally, without a plica. Body brightly metallic. Other features as in *Aprostocetus*.

Host. One species has been reared from a species of Hymenoptera: Tenthredinidae.

Comments. This genus is characterized particularly by the form of the propodeum and the presence of a curved carina on the hind coxa.

Key to species of *Anaprostocetus*

Females

1 Gaster 2·6–3·0 times as long as broad; last tergite 1·4–1·6 times as long as broad. Antenna (Fig. 84) with clava distinctly longer than F2 plus F3; funicular segments relatively shorter, F1 2·0–2·6 times, F2 2·0–2·8 times, F3 1·6–2·1 times as long as broad (Palaearctic) **acuminatus** (p. 84)

– Gaster fully 4 times as long as broad; last tergite fully twice as long as broad. Antenna with clava distinctly shorter than F2 plus F3; funicular segments relatively longer, F1 3·0 times, F2 2·4 times, F3 2·3 times as long as broad (India) .... **dehraensis** (p. 86)

Anaprostocetus acuminatus (Ratzeburg) comb. n.

(Figs 41–43, 84, 85, 562)

Entedon acuminatus Ratzeburg, 1848: 169. Syntypes ♀, Germany: Mecklenburg (*Baron von Pressentin*) (destroyed).
[*Tetrastichus evonymellae* (Bouché); Thomson, 1878: 288. Misidentification.]
Geniocerus acuminatus (Ratzeburg) Kurdjumov, 1913: 251; ? Erdös, 1954: 359.
Aprostocetus acuminatus (Ratzeburg) Graham, 1961*a*: 46.
Tetrastichus acuminatus (Ratzeburg) Domenichini, 1966*a*: 181; 1966*b*: 16; Erdös, 1971: 246.

♀. Head (Fig. 43) about as broad as mesoscutum, about 2·5 times as broad as long, with hind margin virtually truncate; temples about 0·05 length of eyes; POL 1·20–1·35 OOL; OOL about twice OD; ocellar triangle delimited by a distinct grooved line, each lateral ocellus connected to the adjacent eye by a grooved line which expands, just outside the ocellus, to form a subtriangular fovea. Head in front view subtrapeziform, vertex gently arched, genae converging moderately and slightly curved. Eyes 1·30–1·35 times as long as broad, separated by 1·3–1·4 times their length, sparsely clothed with extremely short pubescence. Malar space about 0·66 length of eye, sulcus slightly curved. Head moderately shiny, with excessively fine reticulation; setae of vertex not dense, their length hardly equal to OD. Antenna (Fig. 84) with scape somewhat shorter than an eye, reaching level of median ocellus, nearly or quite 4 times as long as broad; pedicellus plus flagellum about 1·2 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, slightly to distinctly shorter than F1; anelli (Fig. 695); funicle proximally very slightly stouter than pedicellus, thickening slightly distad, usually with F1 and F2 subequal in length and F3 slightly shorter, sometimes all the segments decrease very slightly in length; F1 2·0–2·6 times, F2 2·0–2·8 times, F3 1·6–2·1 times as long as broad; clava slightly broader than F3, nearly or just 3 times as long as broad, very distinctly longer than F2 plus F3 but not as long as the whole funicle, bluntly pointed; C1 and C2 not or hardly longer than broad, the suture between them fairly deep, C3 shorter, its spine (usually somewhat hidden amongst tips of sensilla) nearly half as long as C3, its apical seta hardly half length of spine; sensilla moderately numerous, in two somewhat overlapping rows on each segment, or in one irregular row on the claval segments, the basal row composed of sensilla having a long base and moderately long blade, those of distal row decumbent with their tips projecting slightly. Thorax about 1·5 times as long as broad; propodeal slope 50°–60°. Pronotum crescentic, 0·20–0·25 length of mesoscutum. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately convex, shiny, with excessively fine engraved reticulation, with areoles mostly 2–3 times as long as broad; median line distinct throughout, usually strong; 4–6 rather short reclinate adnotaular setae on each side, but the hindmost longer. Scutellum about 0·65 length of mesoscutum, 1·2–1·3 times as broad as long, moderately convex; sculptured as mesoscutum but rather more finely; submedian lines distinct, slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·2 times as long as broad; setae equal, their length nearly equal to distance between submedian lines, anterior pair slightly behind the middle. Dorsellum 2·5–3·0 times as broad as long, moderately shiny, with extremely fine engraved reticulation, having nearly isodiametric areoles. Propodeum (Fig. 42) medially slightly longer than dorsellum, narrowly and very shallowly emarginate above the petiole; surface between the paraspiracular carinae rather dull, with moderately fine but strong and raised reticulation which has nearly isodiametric areoles; median carina slightly raised, rather thin and sharp, not expanding much posteriorly; paraspiracular carinae fine though distinct, curved; areas between these and the spiracles moderately shiny, with delicate, not raised alutaceous sculpture, the callus similarly sculptured; spiracles short-oval, separated by about 0·3 their length from metanotum; callus with 5–7 setae. Metapleuron with sculpture rather less fine than that of callus, very slightly raised. Legs of medium length and thickness; hind coxae (Fig. 41) hardly twice as long as broad, with hind edge strongly curved, with a fine dorsal carina, outer surface rather dull, with slightly raised reticulation rather finer than that of propodeum; hind femora about 4 times as long as broad; spur of mid tibia 0·65–0·78 length of basitarsus, fourth segment of mid and hind tarsi shorter than basitarsus. Forewing 2·15–2·25 times as long as broad, hardly reaching tip of gaster; costal cell slightly shorter than *M*, 9·5–10·5 times as long as broad, its lower surface with a complete row of setae; *SM* with 4–5 dorsal setae; *M* relatively thin, 3·7–4·0 times length of *ST*, its front edge with 14–19 setae; *ST* at 45°–50°, nearly straight, very thin proximally but expanding gradually to form a rather small stigma which is slightly longer than high and has a moderately long uncus; *PM* rudimentary; speculum rather small but extended as a narrow wedge for a short distance below *M*, closed below; wing beyond it sparsely or rather sparsely pilose, but more thickly distad; cilia 0·35–0·45 length of *ST*. Hindwing obtuse or rounded, cilia 0·20–0·25 breadth. Gastral petiole strongly transverse. Gaster lanceolate, 2·6–3·0 times as long as broad, narrower than or about as broad as thorax, 1·25–1·50 times as long as head plus thorax, strongly acuminate; last tergite 1·4–1·6 times as long as broad; ovipositor sheaths slightly exserted; tip of hypopygium at a little before half length of gaster.

Body strongly metallic, varying from bronze through green with bronze or golden areas to bright green and blue-green (the most frequent form) to blue. Antennae brown to fuscous, scape often testaceous apically, or beneath, sometimes pale with darker dorsal edge; pedicellus often testaceous beneath and at apex; anelli testaceous. Coxae, and femora except their tips, coloured as body, tips of femora moderately broadly yellow or testaceous; tibiae of same colour, occasionally brownish medially; fore tarsi brownish, mid and hind tarsi yellowish to testaceous with fourth segment and pretarsus fuscous, sometimes third segment, rarely also the second, brownish. Tegulae black, sometimes testaceous anteriorly. Wings hyaline, venation yellowish to testaceous. In some continental specimens the femora are less darkened, sometimes only infuscate proximally, whilst the scape and tegulae may be wholly testaceous. Length 2·00–2·65 mm.

♂. Antenna (Fig. 85) with scape 2·6–3·0 times as long as broad, with ventral plaque slightly less than half length of scape; pedicellus plus flagellum 1·6–1·7 breadth of mesoscutum; pedicellus nearly or just twice as long as broad, a little longer than F1; flagellum proximally a little stouter than pedicellus but tapering very slightly distad; F1 subglobose, as long as or hardly longer than broad, 0·5–0·7 as long as F2, F2 a little shorter than F3 and 2·0–2·5 times as long as broad, F4 equal in length to F3 and of similar proportions; each funicular segment is swollen basally and constricted apically; clava 5·0–5·8 times as long as broad, as long as or slightly longer than F3 plus F4, with C1 and C2 subequal in length, each 1·8–2·0 times as long as broad, C3 somewhat shorter, spine about 0·3 length of C3, its apical seta somewhat shorter than spine; sensilla very sparse; whorled setae long, those of F1 reaching slightly beyond tip of F3; C1 with two partial whorls, C2 with one ventral partial whorl, of similar setae. Spur of mid tibia as long as basitarsus. Genitalia (Fig. 562).

Colour as ♀, but gaster with a small to large, subbasal translucent testaceous to yellow spot; femora sometimes wholly pale.

MATERIAL EXAMINED

6 ♂, many ♀. **Austria, Czechoslovakia, France, Germany, Great Britain, Hungary, Italy, Sweden.**

HOSTS. *Euura atra* (L.) and *E. laeta* Fallén.

Anaprostocetus dehraensis sp. n.

♀. Differs from that of *acuminatus* as follows. Ocelli larger, POL 1·4 OOL, OOL hardly greater than OD. Antenna with pedicellus only 0·45 length of F1; funicular segments decreasing regularly in length, relatively longer, F1 3·0 times, F2 2·4 times, F3 2·3 times as long as broad; clava about 2·8 times as long as broad, only as long as F3 plus half of F2. Thorax 1·6 times as long as broad. Mid lobe of mesoscutum slightly longer than broad, with 7–9 adnotaular setae on each side. Scutellum only slightly broader than long; submedian lines hardly nearer to sublateral lines than to each other, enclosing a space almost 2·5 times as long as broad. Forewing 2·35 times as long as broad; *SM* with 6–7 dorsal setae; *M* 5·2 times length of *ST*, its front edge with 20 setae; speculum open below, wing beyond it more sparsely pilose than in *acuminatus*. Hind femora 3·7 times as long as broad. Gaster 4·2 times as long as broad, fully 1·6 times as long as head plus thorax, very strongly acute and acuminate; last tergite fully twice as long as broad; ovipositor sheaths rather more exserted.

Body bright greenish blue. Antennal scape, and legs except coxae, testaceous. Length 3·9 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀: **India**: Uttar Pradesh, Dehra Dun, 21.x.1979 (*Bouček*) (BMNH).

HOST. Unknown.

APROSTOCETUS Westwood

Aprostocetus Westwood, 1833: 444; Kurdjumov, 1913: 252; Erdös, 1954: 353; Graham, 1961*a*: 4–37; 1961*b*: 34–64, in part; Burks, 1967: 756–760, in part; Burks 1979: 1002–1003, in part. Type-species: *Aprostocetus caudatus* Westwood, by monotypy.

[*Cirrospilus* Westwood; Walker, 1838; 1839. Misidentifications.]

Trichoceras Ratzeburg, 1844*a*: in key on unnumbered folder between pp. 40 and 41, 171.

Geniocerus Ratzeburg, 1848: 175; Kurdjumov, 1913: 247–250, in part; Erdös, 1954: 353–360 (excluding cohors 10). [Replacement name for *Trichoceras* Ratzeburg.]

Lonchentedon Ratzeburg, 1852: 215. **Syn. n.**

[*Ceranisus* Walker; Förster, 1856: 84, 86. Misidentification.]

Hyperteles Förster, 1856: 84, 86; Domenichini, 1966*a*: 195; 1966*b*: 54.

Oxymorpha Förster, 1856: 145. [Unnecessary replacement name for *Hyperteles* Förster.]

Myiomisa Rondani, 1877: 189.

Syntomosphyrum Förster, 1878: 60.

[*Tetrastichus* Haliday; Thomson, 1878: 278–298, in part; Burks, 1943: 505–608, in part; Domenichini, 1966*a*: 61–204, in part; 1966*b*: 13–100, in part; 1967: 75–110, in part; Erdös, 1969: 43–48, in part; Burks *in* Krombein *et al.*, 1979: 990–1002, in part. Misidentifications.]

Tetrastichodes Ashmead, 1887: 203.

Ootetrastichus Perkins, 1906: 263. **Syn. n.**

Hadrothrix Cameron, 1913: 102. **Syn. n.**

? *Neomphaloidomyia* Girault, 1917*a*: 118.

Blattotetrastichus Girault, 1917*b*: 257.

Anellaria Bakkendorf, 1934: 9. **Syn. n.**

[*Baryscapus* Förster; Erdös, 1954: 363. Misidentification.]

Pachyscapus Erdös, 1954: 364.

Gyrolachnus Erdös, 1954: 365.

Terebratella Shafee & Rizvi, 1984: 377. **Syn. n.**

DIAGNOSIS. Malar sulcus present, usually straight or weakly curved, rarely strongly curved, usually simple but occasionally foveate below the eye. Eyes and ocelli fully developed. Face without radiating striae. Anterior margin of clypeus bidentate. Mandible tridentate with outer tooth acute, middle and inner teeth progressively more obtuse, the inner tooth sometimes subtruncate or separated from the middle tooth only by an incision or sinus. Antenna of ♀ with scape and pedicellus (except in *eurytus*) having weakly engraved or obsolescent reticulation; anelli discoid to laminar, usually 4, rarely 3 or 2; funicle usually with 3, rarely 4, segments; clava most often with 3 segments but sometimes 2 owing to obsolescence of the second suture, very rarely (*askewi*, *gratus*) solid. Antenna of ♂ with sculpture of scape and pedicellus as in ♀; funicle with 4 segments, clava with 3; in all except a few species each funicular segment bears a compact subbasal whorl of moderately long to very long dark setae, whilst the first and often the second segment of the clava bears similar setae in partial whorls. Thorax with pronotum usually short or very short, rarely moderately long, without a transverse carina. Mid lobe of mesoscutum with or without a median line; nearly always with 1 row of adnotaular setae on each side, rarely with 2 or 3 rows, the anterior setae usually shorter than the posterior setae. Setae of pronotum and mesoscutum not all simultaneously long, thick, straight and suberect (distinction from *Hypertetrastichus* Moser). Scapulae nearly always deeply excised posteriorly (Fig. 299) with scapular flanges sublinear to narrowly triangular; occasionally less deeply excised with broader flanges (*fulvipes*-complex). Scutellum nearly always at least slightly broader than long; normally with 2 pairs of setae (rarely 3 setae on one or both sides in aberrations) which are almost always nearer to submedian than to sublateral lines; submedian lines usually distinct, occasionally weak, rarely absent; sublateral lines neither broad nor deep, hardly sculptured or at most with weak transverse costulae. Dorsellum not divided longitudinally. Propodeum with reticulation varying from obsolescent to slightly raised, never very strong; hind margin weakly to strongly emarginate above the petiole; median carina present; plicae and paraspiracular carinae absent; spiracles in most species moderate-sized and suboval, very close to metanotum, occasionally very small and subcircular, very rarely large, the outer part of their rim (peritreme) nearly always partly covered by a raised flap of the callus (best seen by viewing a little to one side). Mesosternum, just in front of trochantinal lobes almost always flat or virtually so (as in Fig. 52), rarely (some subgen. *Ootetrastichus*) slightly convex. Mesopleuron with precoxal suture usually indicated over about posterior two-thirds (see Fig. 52, ps) though weak; relatively shorter in subgen. *Chrysotetrastichus*; obsolescent in a few species. Hind coxa without dorsolateral longitudinal carina; first segment of mid and hind tarsi in most species at least as long as second, sometimes (*pausiris*-group) very slightly shorter. Species nearly always macropterous, rarely with wings shortened or almost rudimentary; costal cell with a row of setae on its lower surface; *SM* normally with 2 or more dorsal setae, rarely only 1 seta; parastigma hardly ever marked off from *M* by a decolourized area; *PM* absent, rudimentary, or a stub which is at most 0·5 length of *ST*. Petiole subconical or transverse, mostly smooth or with weak traces of sculpture, without longitudinal carinae, in ♀ at least slightly broader than long. Gaster not strongly sclerotized, collapsing to a greater or lesser degree on drying; spiracles of penultimate segment nearly always covered by the preceding segment, apparently lateral or ventral in position; ovipositor sheaths occasionally not projecting but usually projecting at least slightly, sometimes very far, in rare cases even longer than the body; cercus most often with one seta slightly to very distinctly longer than the others and usually more or less sinuate or kinked in the middle of its length; occasionally (*pausiris*-group) the setae subequal in length. Anterior margin of ♀ hypopygium trilobed. Genitalia of ♂ in *grylli* 8 times as long as broad but in all other species at most 6 times, usually less; digitus at most 3·5 times as long as broad (*mandanis*) but in other species 1·2–2·3 times; hind margin of digitus either with a single, more or less obliquely directed spine, or with one tubercle, or with 2 (rarely 3) relatively short teeth. Body metallic or non-metallic, with or without pale markings.

HOSTS. Most often insects inhabiting plant galls, such as Diptera; Cecidomyiidae, sometimes Hymenoptera; Cynipoidea; occasionally Coleoptera or Coccoidea; rarely gall-inhabiting Acari.

COMMENTS. This is an extremely large genus, cosmopolitan in distribution. It is fairly heterogeneous and may need to be subdivided although any attempt at division will have to be based on a study of the species world-wide. One interesting feature emerging from the present study and needing further investigation is the armature of the ♂ digitus. Nearly all species here assigned to the *caudatus*-group of *Aprostocetus* s. str. have 2 teeth on the hind margin of the digitus (Figs 578–585, 587–599); *zosimus* (Fig. 586) has 3 teeth. All other species of *Aprostocetus* examined have a single spine on the hind margin. There appear to be no diagnostic characters which would segregate the females into two corresponding groups, however. Possibly the ♂ genitalic character is only of species-group value.

Keys to subgenera of *Aprostocetus*

Females

1 Brachypterous species .... ***APROSTOCETUS*** (p. 129)
– Macropterous species 2
2 Basitarsus of mid and hind legs about 1·5 times as long as second tarsal segment. Mid lobe of mesoscutum with numerous suberect setae, either scattered all over the surface, or leaving just a bare median longitudinal band. Fore coxae mainly to wholly dark, hind coxae yellow. Body metallic .... ***TETRASTICHODES*** (p. 89)
– Basitarsus of mid and hind legs usually not or hardly longer than second segment; rarely as much

as 1·5 times as long as second, but then mid lobe of mesoscutum with only one row of adnotaular setae on each side, fore coxae pale and hind coxae dark, or both fore and hind coxae dark 3

3 Submarginal vein of forewing with 3 or more dorsal setae 4

– Submarginal vein usually with 2 dorsal setae, occasionally with only 1 seta 6

4 Forewing: subcubital line of setae, on upper surface of wing, reaching or virtually reaching level of basal vein; speculum small to very small, occasionally nearly absent. Propodeal spiracles very small or minute, circular or virtually so. Mid lobe of mesoscutum nearly always without a median line (rarely indicated in the hind half). Thorax long, 1·5–2·0 times as long as broad; pronotum in dorsal view usually 0·25 or more length of mesoscutum. Body metallic. Ovipositor sheaths slightly to very far exserted, sometimes as long as or longer than the body ***OOTETRASTICHUS*** (p. 91)

– Forewing: subcubital line of setae usually reaching only to level of distal edge of speculum, occasionally farther basad, in which case the propodeal spiracles are moderate-sized (as in most species of this section); speculum often moderate-sized or large. Mid lobe of mesoscutum most often with at least some trace of a median line. Thorax sometimes less elongate; pronotum often very short. Body metallic or non-metallic. Ovipositor sheaths concealed or exserted, sometimes far exserted but always shorter than the body 5

5 Propodeal spiracles (see Fig. 49) small, circular, separated by at least half their diameter from hind margin of metanotum, their whole rim visible even when viewed from the side. Frons (Fig. 150) with a median area but lacking a median longitudinal line. Mesosternum moderately convex; mesepisternum without precoxal suture. Malar sulcus rather strongly curved. Body with weak to strong metallic tints, often yellow-marked .... ***CORIOPHAGUS*** (p. 113)

– Propodeal spiracles usually moderate-sized (Fig. 54), occasionally rather small, or (Fig. 284) large, closer to or almost touching the metanotum, the outer part of their rim tending to be more or less covered by a raised flap of the callus, at least when viewed from slightly to one side (Figs 54, 284, 294, 295, 396). Frons with median longitudinal line or carina. Mesosternum, just in front of the trochantinal lobes, flat or virtually so. Mesepisternum usually with some trace of precoxal suture. Malar sulcus usually almost straight, occasionally curved but rarely strongly so. Body metallic or non-metallic, very often without pale markings (most species of the subgenus would run here) .... ***APROSTOCETUS*** (p. 129)

6 Propodeal spiracles moderate-sized, with the outer part of their rim more or less covered by a raised flap of the callus, and close to the metanotum .... ***APROSTOCETUS*** (p. 129)

– Propodeal spiracles either very small to minute and sometimes difficult to see (especially in *Chrysotetrastichus*); or, if doubtful then their whole rim exposed, and the spiracles somewhat separated from the metanotum 7

7 Thorax short and high, less than 1·5 times as long as broad in dorsal view; pronotum very short, transversely lunate. Forewing only 1·80–2·15 times as long as broad, with tip of marginal vein in or slightly before middle. Antenna with 2 or 3 anelli. Mesepisternum with precoxal suture indicated as a fine impressed line over about the hinder third. Mesosternum, just in front of the trochantinal lobes, usually flat. Very small species, length 0·45–1·20 mm (not counting ovipositor sheaths if well exserted) .... ***CHRYSOTETRASTICHUS*** (p. 117)

– Thorax 1·5–2·0 times as long as broad; pronotum subconical, at least 0·25 length of mesoscutum. Forewing 2·05–3·50 times as long as broad (but rarely less than 2·2 times); tip of marginal vein most often slightly beyond middle of wing. Antenna nearly always with 4 anelli, very rarely 3. Mesepisternum with precoxal suture variable, sometimes absent. Mesosternum slightly to distinctly convex. Size often greater 8

8 Mid lobe of mesoscutum normally without a median line. Propodeal spiracles with their outer rim more or less covered by a raised flap of the callus. One seta of each cercus nearly always about twice the length of the next longest. Subcubital line of setae, on upper surface of forewing, extending nearly or quite to level of basal vein. Body either distinctly metallic, or more or less yellow. Precoxal suture of mesepisternum present or absent ***OOTETRASTICHUS*** (p. 91)

– Mid lobe of mesoscutum normally with a median line (rarely evanescent). Propodeal spiracles with the whole of their rim exposed. Longest seta of each cercus 1·5–1·6 times the length of the next longest. Subcubital line of setae, on upper surface of forewing, ending somewhat distad of the basal vein. Body black with very weak metallic tinge. Precoxal suture absent (*miridivorus* only) .... ***CORIOPHAGUS*** (p. 113)

Males

1 Basitarsus of mid and hind legs about 1·5 times as long as the second segment. Mid lobe of mesoscutum with suberect setae either scattered over the whole surface, or leaving at most a median longitudinal bare band. Fore coxae at least mainly dark, hind coxae yellow. Antenna (Fig. 181): ventral plaque of scape extending most of length of scape; funicular segments with compact whorls of very long setae. Body metallic .... ***TETRASTICHODES***(p. 89)

– Basitarsus of mid and hind legs usually not or only slightly longer than the second segment; if as much as 1·3 times as long as second then mid lobe of mesoscutum with only a single row of setae on each side. If the fore coxae are mainly dark then the hind coxae are also mainly to entirely dark 2

2 Antenna: funicular segments each with a compact subbasal whorl of long dark setae; first segment of clava usually with two partial whorls of similar setae (most species of the subgenus) .... ***APROSTOCETUS***(p. 129)

– Antenna: funicle and clava without compact subbasal whorls of long dark setae 3

3 Antenna with funicular segments subequal in length, or the first segment the longest, all longer than broad, the first 2–8 times, fourth 1·6–5·5 times, as long as broad. Pronotum, in dorsal view, at least 0·25 length of mesoscutum 4

– *Either* the first funicular segment of the antenna is quadrate to 1·6 times as long as broad; *or* the pronotum in dorsal view is very short and transversely lunate. Fourth segment of antennal funicle varying from quadrate to twice as long as broad 5

4 Mid lobe of mesoscutum normally without a median line, rarely a line more or less indicated in the hind half. *Either* the ventral plaque of the antennal scape is situated wholly or mainly in the upper half of the scape; *or* the first funicular segment is more slender than the pedicellus. Malar sulcus straight or weakly curved. Propodeal spiracles very small or minute. Forewing: subcubital line of setae, on upper surface of wing, usually reaching or virtually reaching level of basal vein; submarginal vein usually with 2 dorsal setae, occasionally 3, rarely 1 seta ***OOTETRASTICHUS***(p. 91)

– Mid lobe of mesoscutum usually with at least some trace of a median line in the hind half, often over the posterior three-quarters or more. Ventral plaque of scape extending about equally into upper and lower halves; funicle as stout as or slightly stouter than pedicellus. Malar sulcus rather strongly curved. Propodeal spiracles small but distinct. Forewing: subcubital line of setae reaching about level with distal edge of speculum; submarginal vein with 2, 3 or more dorsal setae .... ***CORIOPHAGUS***(p. 113)

5 Propodeal spiracles (Fig. 55) very small or minute, sometimes difficult to see. Body black with weak to strong metallic tints, not pale-marked except sometimes upper angle of mesopleuron and a subbasal spot on the gaster. Antennal scape not strongly swollen (sometimes broad, but then flattened). Spur of mid tibia more than half length of basitarsus and distinctly longer than breadth of the tibia. Forewing with tip of marginal vein at 0·40 to 0·51 length of wing. Very small squat species, length 0·5–1·2 mm .... ***CHRYSOTETRASTICHUS***(p. 117)

– Propodeal spiracles moderate-sized (Figs 54, 294). *Either* the body is non-metallic, black or more or less yellow; *or* the antennal scape is strongly swollen; *or* the spur of the mid tibia is only half the length of the basitarsus and hardly longer than the breadth of the tibia. Forewing with tip of marginal vein at 0·52 to 0·60 length of wing. Species usually larger, or less squat ***APROSTOCETUS***(p. 129)

Subgen. ***TETRASTICHODES*** Ashmead

Tetrastichodes Ashmead, 1887: 203; Bouček, 1977*a*: 19, 28. Type-species: *Tetrastichodes floridanus* Ashmead, by monotypy. [Synonymized with *Aprostocetus* by Graham, 1961*b*: 36.]

Blattotetrastichus Girault, 1917*b*: 257. Type-species: *Entedon hagenowii* Ratzeburg, by original designation. [Synonymized by Graham, 1961*b*: 36.]

Characters of the subgenus are given in the keys to subgenera of *Aprostocetus*, females, couplet 2; and males, couplet 1.

Biology. Egg-parasites of cockroaches (Blattodea).

Key to species of subgenus *Tetrastichodes*

Females

1 Thorax moderately arched dorsally, propodeum sloping at about 30° relative to plane of mesoscutum and scutellum. Submedian lines of scutellum distinct, about twice as far from each other as from sublateral lines, enclosing a space 1·70–1·85 times as long as broad **hagenowii** (p. 90)

– Thorax flattened dorsoventrally. Submedian lines of scutellum tending to be weak or obsolescent, much more than twice as far from each other as from sublateral lines, enclosing a space at most 1·2 times as long as broad .... **asthenogmus** (p. 91)

Aprostocetus (Tetrastichodes) hagenowii (Ratzeburg) **comb. n.**

(Figs 180, 181, 561)

Entedon Hagenowii Ratzeburg, 1852: 211. LECTOTYPE ♀, SEYCHELLES (NM), here designated [examined].

Elachistus aequalis Walker, 1872: 124. Lectotype ♂, MADEIRA (*Wollaston*) (BMNH), designated by Graham (1979: 284) [examined].

Tetrastichodes floridanus Ashmead, 1887: 203. Syntypes, U.S.A.: Florida (USNM) [not examined].

Elachistus aequatus Dalla Torre, 1898: 77. [Unnecessary replacement name for *Elachistus aequalis* Walker.]

Tetrastichodes Browni Ashmead, 1905: 113. Holotype ♀, PHILLIPPINE Is (USNM, Cat.No.8446) [not examined.] [Synonymized by Burks, 1943: 554.]

Geniocerus hagenowi (Ratzeburg) Kurdjumov, 1913: 249; Crawford, 1915: 584. [Invalid emendation.]

Blattotetrastichus hagenowi (Ratzeburg) Girault, 1917: 257.

Tetrastichus hagenowi (Ratzeburg) Masi, 1917: 213, 219–220; Timberlake, 1924: 442: Klein, 1933: 102–122; Burks, 1943: 554–555; Peck, 1951: 446; Roth & Willis, 1954: 53–69; 1960: 249; Peck, 1963: 135; Domenichini, 1966*a*: 185; 1966*b*: 34; Bouček, 1977*a*: 117; Burks, 1979: 996.

Tetrastichus Cesirae Russo, 1938: 235–237, figs CXXIV 4–7, CXXV. LECTOTYPE ♂, ITALY (BMNH), here designated [examined]. **Syn. n.**

Tetrastichus sp.; Russo, 1938: 237–239 in part, fig. CXXVI (♀ only).

Tetrastichodes hagenowii (Ratzeburg) Bouček, 1977*b*: 28.

The original material of *hagenowii* has generally been thought lost. However, in NM, there are two females gummed to a card tag and bearing the following labels: (1) 'Blatta v[on] Hag[enow] (2) Collectio Ratzeburg (3) Hagenowii det. Ratzeburg.' Both are in good condition. I remounted one specimen which is here designated lectotype; the other is labelled paralectotype.

The type-locality for *hagenowii* has usually been cited in major works as 'Germany' but it is really the Seychelles. Ratzeburg stated (1852: 211) 'Bei Hrn. v. Hagenow in Greifswald schlüpfte das Thier in vielen Exemplaren aus den Eierhülsen einer *Blatta* – ich erkenne sie nach den mitgeschickten Exemplaren für die der gemeinen *B. orientalis*. Hr. v. Hagenow hatte sie in trocknen Vogelbälgen gefunden, die von den Seschellen kamen.' Masi (1917: 122) correctly recognized this.

The identity of *Tetrastichus cesirae* Russo, 1938 puzzled me for some time but is now clear. Russo's description of both sexes of *cesirae* evidently refers to specimens of *hagenowii* or some species extremely close to it. Likewise his figures CXXIV (antennae of both sexes) and CXXV (male) fit *hagenowii*. His figure CXXIII, labelled '*Tetrastichus Cesirae* sp. n., adulto: femmina' obviously represents a different species belonging to another species-group; whilst his figure CXXVI, labelled 'Tetratichus sp., adulto, femmina' shows a ♀ of *hagenowii*. The only possible explanation is that the numbers of his figures CXXIII and CXXVI have been accidentally transposed. Russo designated no holotype for *cesirae*. I have examined 3 males in BMNH presented by him and named *cesirae*; they all belong to *hagenowii* and one of them is here selected as lectotype of *cesirae*. Russo (1938: 237) stated that *cesirae* had been obtained from twigs of *Pistacia vera* infested with larvae of *Chaetoptelius vestitus* (Mulsant & Rey) and from olive twigs infested with larvae of *Phloeotribus scarabaeoides* (Bernard). No doubt his samples had been contaminated with parasitized eggs of some cockroach. Under natural conditions these occur under bark, amongst litter, etc.

Tetrastichodes asthenogmus Waterston, 1915, synonymized with *hagenowii* by Roth & Willis (1960), is a valid species (see below).

The characters noted in the subgeneric diagnosis (p. 87) and in the key to species of the subgenus, should be sufficient for recognizing *hagenowii*. Antenna ♀ (Fig. 180), antenna ♂ (Fig. 181), ♂ genitalia (Fig. 561).

MATERIAL EXAMINED
Many ♂, ♀. **Bermuda, India, Italy, Madeira, Malaysia, Seychelles, Sri Lanka, U.S.A., Yugoslavia**. The species is almost cosmopolitan though in colder climates it can only survive under artificial conditions.

HOSTS. *Blatta orientalis* L., *Blattella germanica* (L.), *Periplanta americana* (L.), *P. australasiae* (F.), *P. fuliginosa* (Serville). A gregarious endophagous parasite of the host eggs. Rarely as a secondary parasite through *Evania appendigaster* L.

Aprostocetus (Tetrastichodes) asthenogmus (Waterston) **comb. n.**

Tetrastichodes asthenogmus Waterston, 1915: 340. Lectotype ♀, SRI LANKA (BMNH), designated by Bouček (1979: 96) [examined].
Tetrastichus metalliferus Masi, 1917: 220. LECTOTYPE ♀, SEYCHELLES: Mahé (*H. Scott*) (BMNH), here designated [examined]. **Syn. n.**
Tetrastichus asthenogmus (Waterston) Bouček, 1979: 96.

The ♀ specimen of *Tetrastichus metalliferus* Masi here designated as lectotype has been already registered as Type Hym. 5. 1392 in BMNH. Waterston's original description, supplemented by the characters noted in the key to species (p. 90), should allow the ♀ of this species to be distinguished from *hagenowii*. The ♂ is unknown.

MATERIAL EXAMINED
5 ♀. **Seychelles, Sri Lanka.**

HOST. Eggs of unidentified cockroach.

Subgen. *OOTETRASTICHUS* Perkins

Ootetrastichus Perkins, 1906: 263. Type-species: *Ootetrastichus beatus* Perkins, by monotypy.
? *Neomphaloidomyia* Girault, 1917*a*: 118. Type-species: *Hyperteles polynemae* Ashmead, by original designation.
Anellaria Bakkendorf, 1934: 9; Kostjukov, 1977: 190. Type species: *Anellaria conomeli* Bakkendorf, by monotypy.
Pachyscapus Erdös, 1954: 364. Type-species: *Ceranisus* [recte *Cirrospilus*] *crino* Walker, by monotypy.
Gyrolachnus Erdös, 1954: 365. Type-species: *Gyrolachnus longulus* Erdös, by monotypy.
Terebratella Shafee & Rizvi, 1984: 377. Type-species: *Terebratella indica* Shafee & Rizvi, by original designation and monotypy.

Characters of the subgenus are incorporated in the key to subgenera of *Aprostocetus*: females, couplets 4 and 8 (p. 88); and males, couplet 4 (p. 89).

BIOLOGY. Species of *Ootetrastichus* are egg-parasites of Hemiptera; Cicadellidae and Delphacidae; Orthoptera; Gryllidae; Odonata; and Coleoptera: Dytiscidae.

COMMENTS. Probably several species-groups exist in this subgenus. *A.*(*O.*) *askewi* is particularly distinct; *percaudatus*, together with some undescribed species, may constitute a species-group; the remaining species mentioned here, including *crino*, another group. Definition of species-groups, however, should await a wider treatment of the subgenus.

Keys to European species of subgenus *Ootetrastichus*

Females

1 Thorax strongly depressed dorsoventrally, in the dried specimen almost flat. Antennae (Fig. 113) inserted relatively low on the head, their toruli slightly below level of ventral edge of eyes; clava apparently solid, its dorsal surface clothed with long curved setae. Foramen magnum situated above middle of head .... ***askewi*** (p. 94)
— Thorax not or only slightly depressed dorsoventrally. Antennae inserted higher on the head, lower edge of toruli at or above level of ventral edge of eyes; clava 2- or 3-segmented. Foramen magnum not or hardly above middle of head 2

2 Head, especially vertex, pronotum, mesoscutum and scutellum, with conspicuously long suberect setae; tibiae with outstanding setae; gaster clothed, except at base, with long outstanding setae (Fig. 118). Body slender, length 1·3–1·4 mm, black with weak bronze tinge; legs fuscous with at most trochanters and knees pale. Forewing narrow, with very long cilia, much as in *crino* (Fig. 123); submarginal vein with 2 dorsal setae .... ***longulus***(p. 101)

— Head, especially vertex, with shorter and less erect setae; those of pronotum, mesoscutum and scutellum shorter and less erect; setae of tibiae standing out only slightly; gaster usually less bristly. The other characters usually different 3

3 Gaster (Fig. 115) with postcercale linear, longer than the exserted part of the ovipositor sheaths; gaster with numerous long setae. Submarginal vein of forewing with 3–5 dorsal setae. Mid and hind tibiae pale with their tips brown to black .... ***rufus***(p. 100)

— Gaster with postcercale narrowly to broadly triangular; surface of gaster with relatively fewer or shorter setae. Submarginal vein of forewing most often with 2 dorsal setae, with only 1 seta in some *crino*; if with 3 or more then ovipositor sheaths nearly always at least 0·7 length of gaster 4

4 Ovipositor sheaths for exserted, their projecting portion at least 0·7 length of gaster but usually longer, sometimes longer than the whole body. Submarginal vein normally with 3–5 dorsal setae, rarely 2 .... ***percaudatus***(p. 112)

— Ovipositor sheaths much less exserted, their projecting portion at most half the length of the hind tibia. Submarginal vein normally with 2 dorsal setae, rarely 1 seta or 3 setae 5

5 Antenna (Fig. 116) black, with clava 4·3–4·9 times as long as broad, at least as long as funicular segments 2 plus 3, its terminal spine very short; flagellum with relatively short and inconspicuous pilosity. Legs dark with knees, tips of tibiae, and tarsi proximally, testaceous. Very small species, length 0·9–1·2 mm .... ***graciliclava***(p. 102)

— Antennae usually paler in colour with scape most often pale; clava usually less elongate; if not, then *either* the clava is shorter than funicular segments 2 plus 3, *or* it has a longer terminal spine. Flagellum with relatively long and conspicuous pilosity. Legs rarely so extensively infuscate as in the above. Species sometimes larger 6

6 Species with following combination of characters: antenna (Fig. 125) with first funicular segment at least 8 times as long as broad and as long as the clava, third segment at least 4 times as long as broad: propodeum medially about twice as long as the dorsellum, callus with 4 setae; gaster ovate, not longer than head plus thorax, with oviposotor sheaths only slightly exserted; forewing about 2·5 times as long as broad .... ***leptocerus***(p. 105)

— Funicular segments of antenna nearly always relatively shorter, if approaching the above in length then the propodeum is hardly longer than the dorsellum, the callus has 2 setae, and the gaster is lanceolate, longer than head plus thorax, with ovipositor sheaths farther exserted.... 7

7 Antenna (Fig. 119) with first funicular segment 6–7 times, third at least 3 times, as long as broad. Exserted portion of ovipositor sheaths 0·33–0·50 length of hind tibia. Forewing relatively marrow, 2·6–2·8 times as long as broad .... ***eupatorii***(p. 104)

— Antenna with first funicular segment at most 5 times as long as broad *except* in *mycerinus* which has the forewing at most 2·2 times as long as broad, and in *viatorum* which has third funicular segment at most twice as long as broad and ovipositor sheaths hardly projecting 8

8 Forewing (Fig. 121) only 2·05–2·20 times as long as broad. Antenna (Fig. 120) with first funicular segment 3–5 times, third 2·7–3·5 times, as long as broad. Hind femora more or less brown or fuscous. Anterior setae of scutellum slightly to rather distinctly behind the middle. Exserted portion of ovipositor sheaths 0·25–0·30 length of hind tibia .... ***mycerinus***(p. 103)

— Forewing usually narrower, if nearly as broad as in *mycerinus* then first funicular segment is at most 3 times, the third at most twice, as long as broad, the hind femora are yellow, and the anterior setae of the scutellum are in the middle 9

9 Propodeal callus with 4–6 setae. Antenna (Fig. 129): all the funicular segments, and the claval segments, with decumbent or virtually decumbent sensilla as well as more outstanding setae. Gaster metallic; basal tergite with a transverse row of a few setae near the hind margin, in addition to some at the sides .... ***citripes***(p. 107)

— Propodeal callus with 2 setae. Sensilla of flagellum outstanding (except sometimes one or two on the first funicular segment) and setiform. Gaster sometimes more or less pale at base; basal tergite with setae at the sides only 10

10 Frons with a fine median longitudinal carina, at least in its lower half. Antenna with clava plus terminal spine at least slightly shorter than funicular segments two plus three; first funicular segment at least 1·3 times length of pedicellus 11

— Frons without median carina or line, but with a trapeziform median area (Fig. 148). Antennal clava plus spine at least as long as funicular segments two plus three; first funicular segment usually shorter, sometimes not longer than the pedicellus 12

11 Antenna (Fig. 126) with clava plus spine 3·5–4·0 times as long as broad; flagellum very slender. Forewing 2·6–2·7 times as long as broad, sometimes faintly infumate along its apical margin. Head and gaster wholly metallic. Mid lobe of mesoscutum with 2 adnotaular setae on each side. Tarsi yellowish with fourth segment brown, third sometimes brownish ...... ***polygoni*** (p. 106)

— Antenna (Fig. 127) with clava plus spine 2·8–3·2 times as long as broad; flagellum less slender. Forewing 2·3–2·5 times as long as broad, hyaline. Head usually more or less yellow (at least the mouth edge); base of gaster often testaceous. Mid lobe of mesoscutum usually with 3 adnotaular setae on each side. Tarsi usually darkening progressively from near the base ***ovivorax*** (p. 105)

12 Thorax slightly flattened dorsoventrally, broader than high. Antenna (Fig. 131) with scape slender, reaching well above vertex, its front edge with numerous setae; there are also some other setae on the outer surface near the front edge .... ***pseudopodiellus*** (p. 108)

— Thorax quite strongly arched dorsally. Antenna with scape less slender, not reaching or hardly reaching above the vertex, its front edge usually with fewer setae 13

13 Antenna (Fig. 134): funicle proximally much less stout than pedicellus, but thickening distad; first funicular segment 5–6 times as long as broad; clava distinctly broader than third funicular segment, 2·5–2·9 times as long as broad; 3 anelli, the third subquadrate. [Tips of all tibiae more or less infuscate.] (Madeira) .... ***viatorum*** (p. 111)

— Antenna (Figs 130, 132, 133): funicle proximally usually less slender but if not then hardly thickening distad and first funicular segment at most 4 times as long as broad; clava sometimes relatively longer; 4 anelli, all transverse 14

14 Antenna (Fig. 133) with clava 2·1–2·3 times as long as broad; scape with numerous setae on its front edge, and some others on the outer surface near the front edge .... ***ping*** (p. 110)

— Antenna with clava 2·6–4·0 times as long as broad; scape often with fewer setae on its front edge, sometimes without any others on the outer surface near the front edge..................... 15

15 Antenna (Fig. 130) with clava 3·5–4·0 times as long as broad, its first segment tending to be slightly longer than broad; flagellum brownish to fuscous. Mid lobe of mesoscutum with 2–3 adnotaular setae on each side. Length of body 1·1–1·6 mm. .... ***mandanis*** (p. 108)

— Antenna with clava (Fig. 132) 2·6–3·2 times as long as broad; first segment of clava not longer than broad; flagellum testaceous or yellowish. Mid lobe of mesoscutum with 1–2 adnotaular setae on each side (occasionally 3 in *ibericus*). Length 0·75–1·50 mm. 16

16 At most the mouth-edge and base of gaster testaceous. Antenna (Fig. 132) with scape slightly shorter than an eye. (Widespread in Europe) .... ***crino*** (p. 109)

— At least the face mainly, genae, sides and hind margin of mid lobe of mesoscutum, and basal half of gaster mainly, yellow. Antennal scape about as long as an eye. (Spain) ..... ***ibericus*** (p. 111)

Males

The males of *askewi*, *longulus*, *graciliclava*, *leptocerus* and *viatorum* are unknown.

1 Antenna (Fig. 136) with scape about 1·3 times as long as an eye and about 1·7 times as long as the clava, reaching very far above the vertex, its ventral plaque extending over the upper half; clava distinctly broader than the very slender funicle and darker in colour, slightly shorter than funicular segments three and four, its first and second segments not longer than broad. Submarginal vein with 3 or 4 dorsal setae .... ***rufus*** (p. 100)

— Antennal characters different: *either* the scape is shorter or has different ventral plaque; *or* the clava differs in shape or has its segments longer than broad. Submarginal vein usually with 2 dorsal setae, occasionally only 1 seta; in *percaudatus* with 3–4, but then the antennal clava (Fig. 141) is very elongate and not broader than the funicle 2

2 Antennal scape about 6 times as long as broad, its ventral plaque very long, extending from near the tip of the scape over about 0·85 of its length; pedicellus hardly shorter than first funicular segment. Forewing about 4 times as long as broad; submarginal vein with 1 dorsal seta (? always) .... ***pseudopodiellus*** (p. 108)

— Antennal scape at most 4 times as long as broad, its ventral plaque usually relatively shorter; pedicellus often much shorter, though sometimes longer, than the first funicular segment. Forewing rarely so narrow as in *pseudopodiellus*; submarginal vein (except in some *crino* and *ibericus*) with at least 2 dorsal setae, rarely 3 or 4 3

3 Antennal scape (Figs 144, 145) swollen and sac-like, 1·5–2·6 times as long as broad, nearly as long as anelli plus funicle, its ventral edge with a very long sensory band or ridge; pedicellus as long as or longer than the first funicular segment 4

— Antennal scape not swollen but flattened, 2·6–4·0 times as long as broad, much shorter than anelli plus funicle, with a relatively shorter ventral plaque; pedicellus (except in *mandanis*) slightly to much shorter than the first funicular segment 6

4 Fourth segment of fore tarsus (Fig. 149) flattened, very broad and disc-like. Antenna much resembling that of *crino* (Fig. 144) .... ***ping*** (p. 110)

— Fourth segment of fore tarsus (Fig. 147) not expanded 5

5 Antenna (Fig. 144) with scape 1·8–2·6 times as long as broad. Mesoscutum without yellow markings. Gaster dark with base, or up to proximal half, yellowish .... ***crino*** (p. 109)

— Antenna (Fig. 145) with scape 1·50–1·75 times as long as broad. Mid lobe of mesoscutum mainly, hind margins of scapulae, and gaster (except a pair of spots on the sides of tergites 1 to 4 and transverse bars upon the 2 following segments) yellow .... ***ibericus*** (p. 111)

6 Antenna (Fig. 142) with scape broadest in the upper part and tapering towards the base, ventral plaque very short, only 0·30–0·35 length of scape; combined length of pedicellus and flagellum 1·8–2·0 times breadth of mesoscutum. Genitalia (Fig. 572) elongate; digitus about 3 times as long as broad, tapering slightly posteriorly, with a long, backward-directed spine ***mandanis*** (p. 108)

— Antennal scape either not distinctly broader in the upper half, or else with ventral plaque at least 0·5 length of scape. Genitalia less elongate; digitus at most twice as long as broad, expanded slightly posteriorly, with a shorter, obliquely directed spine 7

7 Antenna (Fig. 143): scape with very short ventral plaque, only about 0·25 length of scape; pedicellus slightly to distinctly longer than the first funicular segment; combined length of pedicellus and flagellum about 1·5 times breadth of mesoscutum .... ***citripes*** (p. 107)

— Antennal scape, except in *ovivorax*, with longer ventral plaque; pedicellus shorter than the first funicular segment; combined length of pedicellus and flagellum 2·5–3·2 times breadth of mesoscutum 8

8 Antenna (Fig. 139) with ventral plaque of scape short, 0·30–0·35 length of scape ... ***ovivorax*** (p. 105)

— Antenna with ventral plaque of scape 0·5–0·6 length of scape 9

9 Antenna (Fig. 137) with scape reaching far above the vertex; flagellum extremely slender, distinctly less stout than the pedicellus; funicular segments very elongate, the first 7–8 times, fourth 4·0–4·5 times as long as broad; clava 8·0–8·5 times as long as broad .... ***eupatorii*** (p. 104)

— Antennal scape sometimes not reaching above the vertex; flagellum usually less slender; funicular segments less elongate, the first at most 5 times, fourth at most 4 times, as long as broad; clava at most 7 times as long as broad 10

10 Antenna (Fig. 140) with flagellum very slender, not stouter than the pedicellus; first funicular segment about 5 times as long as broad and about twice as long as the pedicellus; flagellum testaceous with the clava dark .... ***polygoni*** (p. 106)

— Antenna with flagellum less slender; first funicular segment at most 3·5 times as long as broad; flagellum uniformly coloured 11

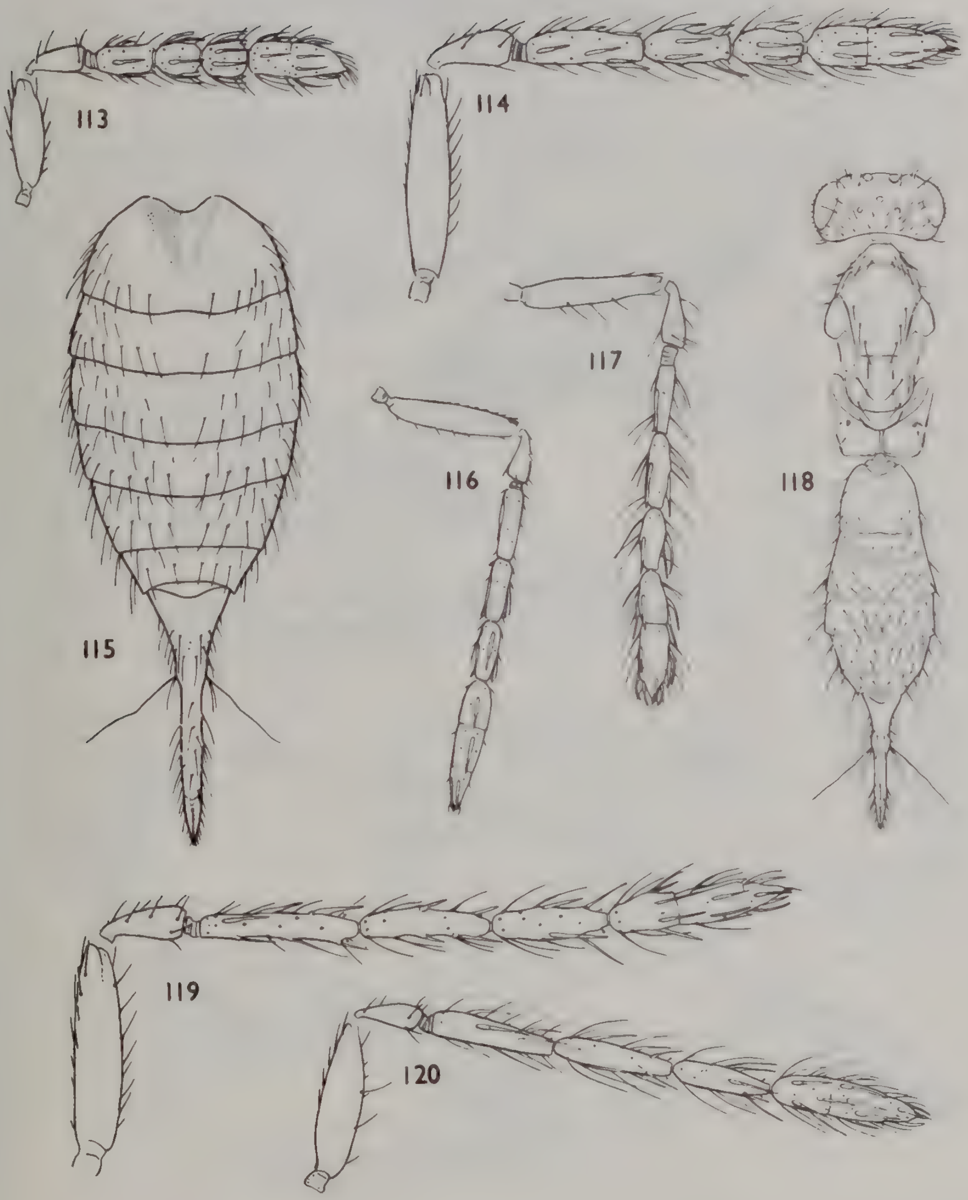
11 Antenna (Fig. 141) with scape about 3 times as long as broad, reaching above vertex. Submarginal vein with 3–4 dorsal setae .... ***percaudatus*** (p. 112)

— Antenna (Fig. 138) with scape about 2·6 times as long as broad, hardly reaching above vertex. Submarginal vein with 2 dorsal setae .... ***mycerinus*** (p. 103)

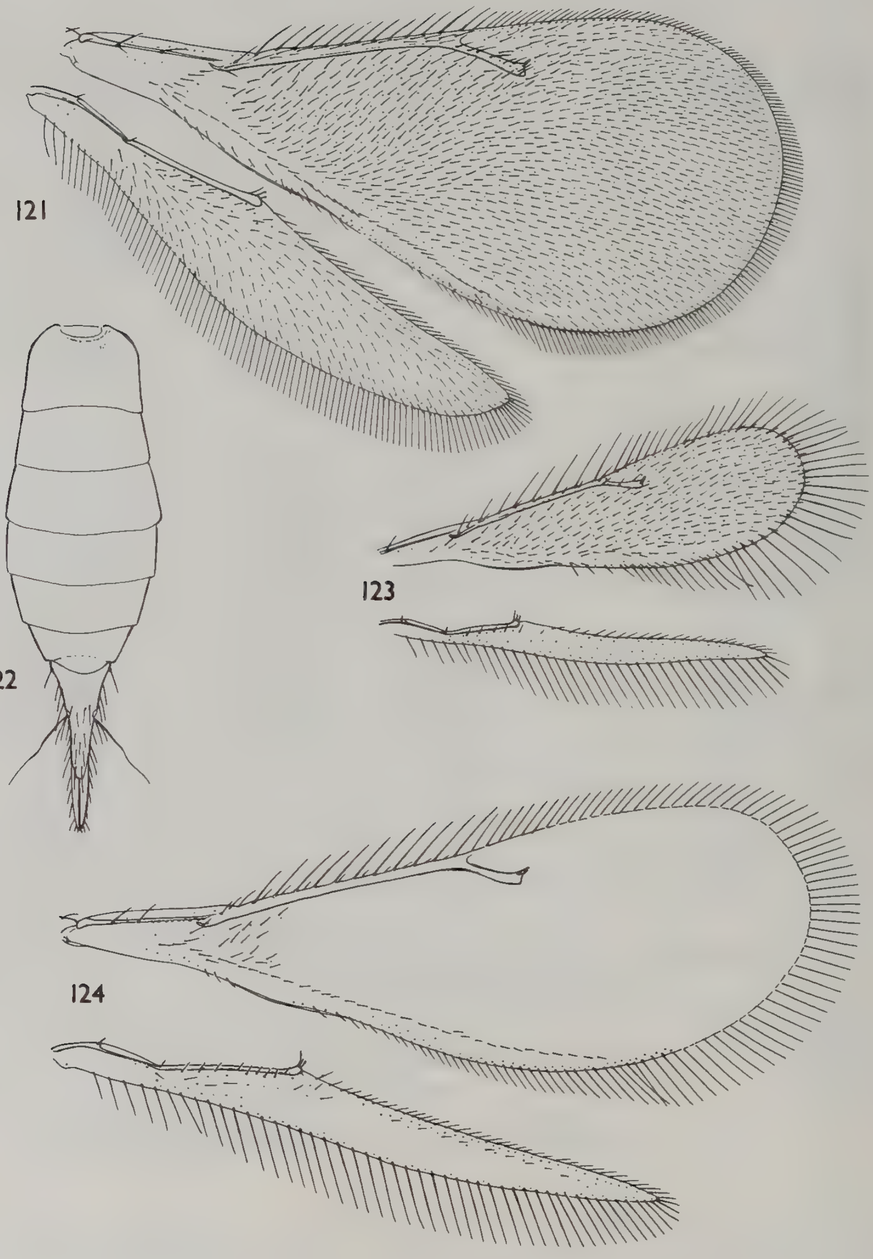
Aprostocetus (Ootetrastichus) askewi **sp. n.**

(Fig. 113)

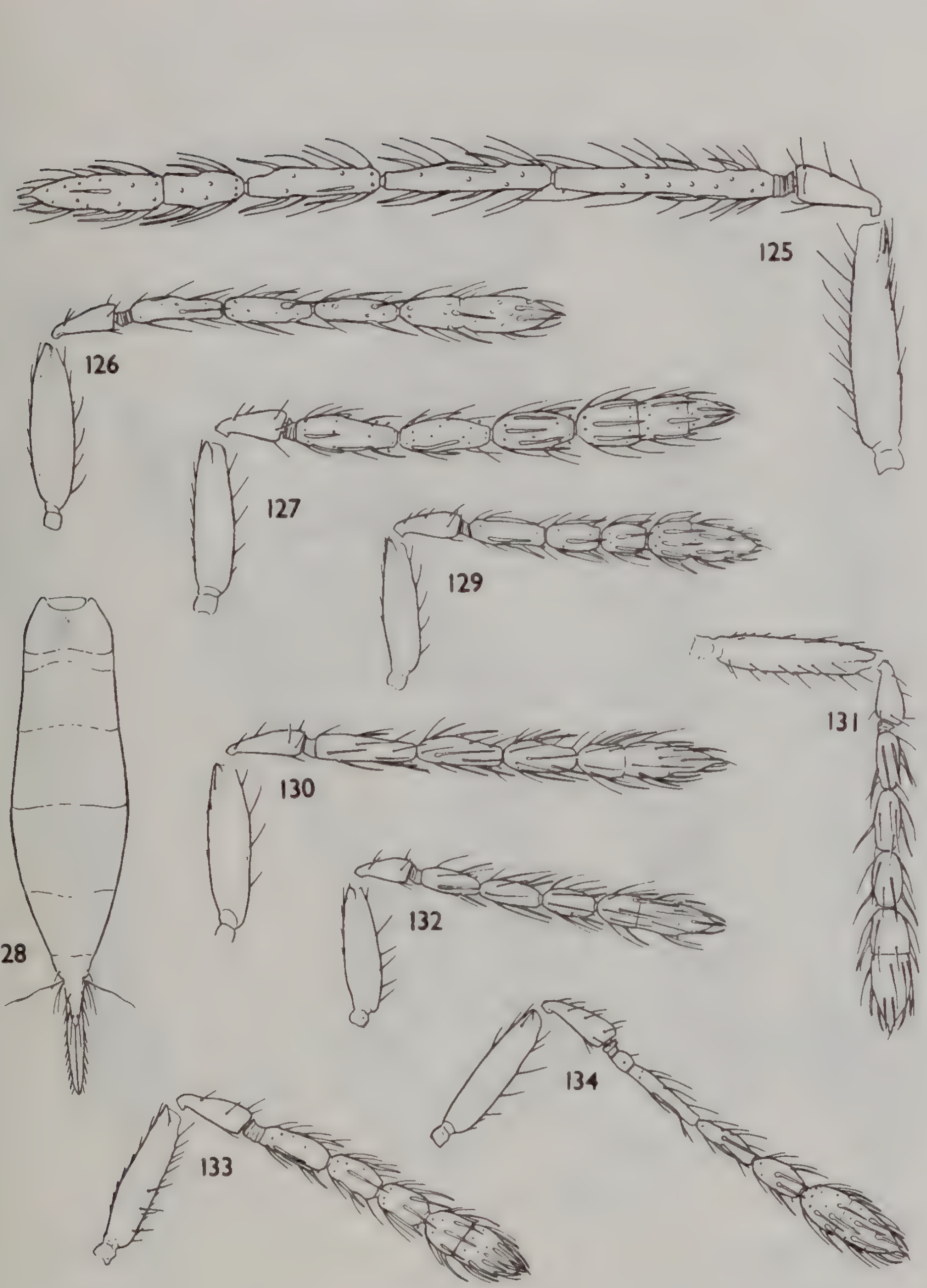
♀. Head collapsed so that vertex appears transversely linear; POL about equal to OOL; OOL fully 3 times OD. Frons with sublinear median area which is extremely narrow at level of median ocellus but broadens slightly towards antennal toruli. Eyes distorted but longer than broad, with moderately long but rather sparse pubescence. Malar space less than half length of eye, sulcus slightly curved. Antenna (Fig. 113) with toruli placed at or slightly below level of ventral edge of eyes; scape much shorter than eye and not nearly reaching median ocellus; pedicellus plus flagellum about 1·2 times breadth of mesoscutum; pedicellus about 2·3 times as long as broad, about as long as F1, with long setae; anelli laminar, apparently 3 or 4; funicle proximally hardly as stout as pedicellus, thickening very slightly distad; F1 about twice as long as broad, F2 distinctly shorter and about 1·3 times as long as broad, F3 about as long as F2; clava hardly broader than F3, as long as F2 plus F3, about 2·7 times as long as broad, not distinctly segmented, in profile



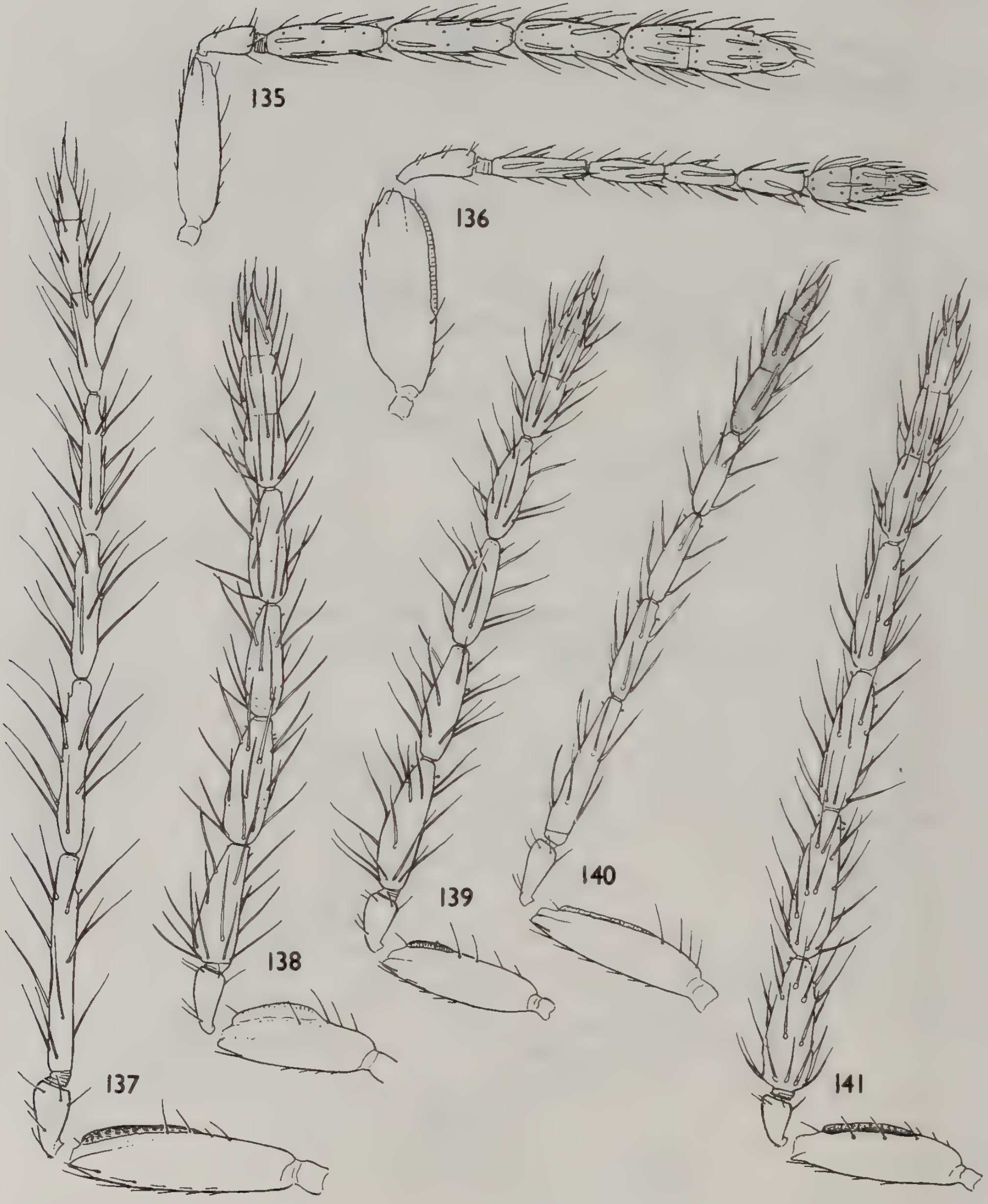
Figs 113–120 *Aprostocetus* (*Ootetrastichus*) species, females. 113, *A.* (*O.*) *askewi* sp. n., antenna. 114, 115, *A.* (*O.*) *rufus* (Bakkendorf): (114) antenna; (115) gaster. 116, *A.* (*O.*) *graciliclava* sp. n., antenna. 117, 118, *A.* (*O.*) *longulus* (Erdös): (117) antenna; (118) body. 119, *A.* (*O.*) *eupatorii* Kurdjumov, antenna. 120, *A.* (*O.*) *mycerinus* (Walker), antenna.



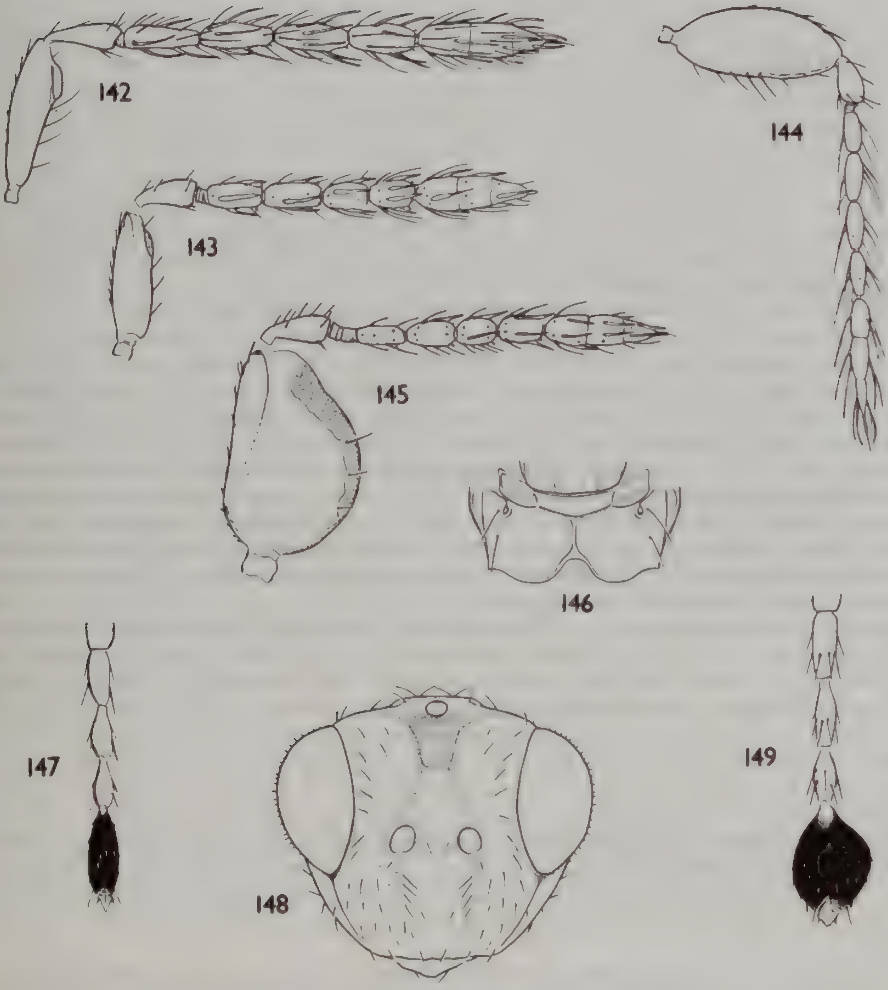
Figs 121–124 *Aprostocetus* (*Ootetrastichus*) species, females. 121, 122, *A.* (*O.*) *mycerinus* (Walker); (121) fore and hind wings; (122) gaster. 123, 124, *A.* (*O.*) *crino* (Walker): fore and hind wings; (123) small specimen; (124) large specimen.



Figs 125–134 *Aprostocetus* (*Ootetrastichus*) species, females. 125, *A.* (*O.*) *leptocerus* sp. n., antenna. 126, *A.* (*O.*) *polygoni* (Erdös), antenna. 127, *A.* (*O.*) *ovivorax* (Silvestri), antenna. 128, *A.* (*O.*) *polygoni* (Erdös), gaster. 129, *A.* (*O.*) *citripes* (Thomson), antenna. 130, *A.* (*O.*) *mandanis* (Walker), antenna. 131, *A.* (*O.*) *pseudopodiellus* (Bakkendorf), antenna. 132, *A.* (*O.*) *crino* (Walker), antenna. 133, *A.* (*O.*) *ping* sp. n., antenna. 134, *A.* (*O.*) *viatorum* (Graham), antenna.



Figs 135–141 *Aprostocetus* (*Ootetratichus*) species, antennae. 135, *A.* (*O.*) *percaudatus* (Silvestri) ♀. 136, *A.* (*O.*) *rufus* (Bakkendorf) ♂. 137, *A.* (*O.*) *eupatorii* Kurdjumov ♂. 138, *A.* (*O.*) *mycerinus* (Walker) ♂. 139, *A.* (*O.*) *ovivorax* (Silvestri) ♂. 140, *A.* (*O.*) *polygoni* (Erdös) ♂. 141, *A.* (*O.*) *percaudatus* (Silvestri) ♂.



Figs 142–149 *Aprostocetus* (*Ootetrastichus*) species. 142, *A.* (*O.*) *mandanis* (Walker) ♂, antenna. 143, *A.* (*O.*) *citripes* (Thomson) ♂, antenna. 144, *A.* (*O.*) *crino* (Walker) ♂, antenna. 145, *A.* (*O.*) *ibericus* sp. n. ♂, antenna. 146, *A.* (*O.*) *mandanis* (Walker) ♀, metanotum and propodeum. 147, *A.* (*O.*) *crino* (Walker) ♂, fore tarsus. 148, *A.* (*O.*) *mandanis* (Walker) ♀, head, frontal. 149, *A.* (*O.*) *ping* sp. n. ♂, fore tarsus.

asymmetrical with dorsal edge strongly curved and ventral edge weakly so, pointed but without a distinct spine; sensilla sparse, uniseriate, long and slender, with short bases and outstanding blades; segments clothed with moderately long, outstanding curved setae, F2, F3 and claval segments also with some longer and curved but less outstanding setae. Thorax strongly depressed, in its dried state nearly flat, 1·7–1·8 times as long as broad. Pronotum about 0·66 length of mesoscutum, subtriangular, shiny, with a few setae at sides and a row of 8 moderately long ones before hind margin. Mid lobe of mesoscutum slightly broader than long, flat, shiny, with extremely fine lightly engraved reticulation having most areoles about 3 times as long as broad; hind margin shallowly emarginate in a very obtuse angle; 2 moderately long erect adnotaular setae on each side, one close to the front corner and the other in the hinder half of the sclerite. Scutellum about 0·66 length of mesoscutum, very weakly convex, about 1·5 times as broad as long, shiny, reticulation much finer-meshed than that of mesoscutum and with areoles varying from 2 to 4 times as long as broad; submedian lines rather weak, about twice as far from each other as from sublateral lines, enclosing a space about 1·4 times as long as broad; setae equal, about as long as adnotaulars, anterior pair very slightly behind middle. Dorsellum about 2·7 times as broad as long, hind edge strongly curved, almost angulate. Propodeum horizontal, fully 0·75 times length of scutellum and about 2·5 times as broad as long, hardly emarginate above the petiole, shiny, with moderately fine, superficial reticulation; median carina represented by a broad, smooth, hardly raised strip which has a shallow elongate fovea in its basal half; spiracles small, subcircular, approximately their own length from metanotum, their whole rim exposed; callus with a short seta outside the spiracle and a short one near the hind corner. Legs of medium length and thickness; hind coxae very strongly oblique, shiny; hind femora about 3·5 times as long as broad; spur of mid tibia about 0·5 length of basitarsus, fourth tarsomere distinctly shorter than basitarsus. Forewing about 3 times as long as broad; costal cell shorter than *M*, 14–15 times as long as broad, lower surface with only a row of setae on basal half of *SM*; *SM* with 2 rather long dorsal setae; *M* rather thin, about 4·7 times length of *ST*, its front edge with 7–8 setae which are as long as *ST*; *PM* rudimentary; *ST* at about 50°, thin proximally but expanded in distal half to form a small subtriangular stigma; speculum small but extending as a narrow strip about half length of *M*; wing beyond moderately thickly pilose, especially distad, but with costa and a triangular area below *ST* nearly bare; cilia as long as *ST*. Hindwing pointed; cilia about 0·66 breadth of wing. Gaster elliptic, nearly as long as but somewhat narrower than thorax, bluntly pointed with last tergite small and about twice as broad as long; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium slightly beyond half length of gaster.

Head and thorax brilliant metallic green, scutellum more blue-green; gaster with weaker greenish and blue-green tints. Antennal scape testaceous with dorsal edge dark, rest of antenna fuscous with tip of pedicellus pale. Legs, except hind coxae mainly, yellowish, tarsi darkening to brownish at tips. Wings slightly yellowish, venation (and tegulae) testaceous. Length 1·1 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Dordogne, Duras, Sainte Foy, Lac Castelgaillard, on flower of *Daucus carota*, 3.viii.1976 (*R. R. Askew*) (RRA).

HOST. Unknown.

COMMENT. This species is named after Dr R. R. Askew, who has made notable contributions to chalcidology. The character suite indicated by the group and species descriptions make it very distinct from other known species.

Aprostocetus (Ootetrastichus) rufus (Bakkendorf) **comb. rev.**

(Figs 114, 115, 563)

Tetrastichus rufus Bakkendorf, 1953: 549; Domenichini, 1966*a*: 180; 1966*b*: 48; Kostjukov, 1978*b*: 458. Holotype ♀, DENMARK: Viemose (coll. Bakkendorf) [not examined].

Aprostocetus cupratus Erdös, 1958: 219. Holotype ♀, HUNGARY: Kelebia, 30.iv.1949 (TM) [examined]. [Synonymized by Graham, 1961*a*: 46.]

Aprostocetus rufus (Bakkendorf) Graham, 1961*a*: 46.

♀. Head slightly broader than mesoscutum, slightly more than twice as broad as long; temples about 0·11 length of eyes; POL 1·2–1·5 OOL; OOL 2·1–2·5 times OD. Head in front view trapeziform with genae converging rather strongly. Eyes 1·1 times as long as broad, separated by 1·15 their length, almost bare.

Malar space 0·55–0·60 length of eye, sulcus straight. Mouth 1·25 times malar space. Antenna (Fig. 114) with scape as long as eye, reaching above vertex; pedicellus plus flagellum nearly 1·5 times breadth of mesoscutum; pedicellus 2·5–2·7 times as long as broad, slightly shorter than or as long as F1; funicle proximally about as stout as pedicellus, thickening slightly distad, its segments decreasing distinctly in length, F1 3·7–4·3 times, F2 2·4–2·7 times, F3 1·7–2·0 times as long as broad; clava slightly broader than F3, 3·5–3·8 times as long as broad, its first and second segments somewhat longer than broad, terminal spine about half length of third segment; sensilla moderately numerous, biseriate on F1, uniseriate on the other segments, moderately long, slender, with moderately long bases and long projecting blades. Thorax about 1·6 times as long as broad; propodeal slope about 45°. Mid lobe of mesoscutum about as long as broad, convex, moderately shiny, with excessively fine engraved reticulation composed of nearly isodiametric areoles, with 2–3 rather long adnotaular setae on each side. Scutellum slightly broader than long, moderately convex, rather more shiny and with more delicate sculpture than mesoscutum; submedian lines about twice as far from each other as from sublateral lines, enclosing a space twice as long as broad; anterior setae in or slightly before the middle. Propodeum long, even medially about 1·5 times as long as dorsellum, narrowly and weakly emarginate above the gastral petiole; surface moderately shiny, with extremely fine superficial reticulation; median carina distinct, broadening posteriorly; spiracles very small, separated by nearly their diameter from metanotum; callus with 4–7 setae. Legs moderately long, rather slender; hind femora about 4·5 times as long as broad; spur of mid tibia 0·5 length of basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing 2·4–2·6 times as long as broad; costal cell shorter than *M*, 14–17 times as long as broad; *SM* with 3–5 dorsal setae; *M* thin, 4·5–5·5 times length of *ST*, its front edge with 11–14 setae; *ST* straight, at 45° to 50°, slender proximally but gradually expanding distad into the stigma; speculum virtually absent, wing beyond it thickly pilose; *PM* a short stub; cilia at least slightly shorter than *ST*. Hindwing pointed; cilia about 0·33 breadth. Gaster (Fig. 115) elliptic but with last segment acuminate and forming a sublinear postcercale, including ovipositor sheaths 1·4–1·5 times length of head plus thorax, clothed with numerous conspicuously long setae.

Body green with more or less extensive brassy to coppery areas, sometimes mainly coppery. Antennae fuscous or black with scape testaceous beneath. Hind coxae mainly to wholly dark, fore and mid coxae testaceous or dark at base; legs otherwise testaceous, except the tips of all tibiae which are brown to fuscous; tarsi fuscous, or testaceous proximally. Tegulae brownish, or more or less testaceous. Wings subhyaline or slightly yellowish, venation testaceous. Length 2·00–2·52 mm.

Erdös (1958: fig. 8) published a good figure of the whole insect. Bakkendorf's figures of various parts (1953) are excellent.

♂. Antenna (Fig. 136) with scape swollen, 2·8–3·0 times as long as broad, about 1·3 times as long as eye and reaching far above the vertex; ventral plaque a ridge which extends from near the apex to about two-thirds length of scape; pedicellus plus flagellum 1·7–1·8 times breadth of mesoscutum; pedicellus as long as, or very slightly shorter than, F1; funicle proximally much more slender than pedicellus, hardly thickening distad, its segments decreasing slightly in length, F1 3·5–5·0 times, F2 3·0–4·0 times, F3 2·5–3·0 times, F4 about twice, as long as broad; clava slightly broader than funicle, 3·7–3·8 times as long as broad, about as long as F3 plus F4, its first and second segments slightly longer than broad; sensilla sparse, standing out slightly (nearly decumbent on F1); numerous setae, whose length is about equal to the breadth of the segments. Gaster elliptical, about as long and as broad as thorax, with ventral plica. Genitalia (Fig. 563).

Colour as ♀ but antennae bright testaceous with clava brown to fuscous; ventral plaque, and sometimes dorsal edge, of scape slightly darkened; tarsi sometimes testaceous proximally. Length 1·4–1·5 mm.

MATERIAL EXAMINED

3 ♂, 10 ♀. **Czechoslovakia, Denmark, France, Great Britain, Hungary**. Also recorded from Denmark by Bakkendorf (1953).

HOST. Eggs of *Dystiscus* sp. in stems of *Juncus effusus* (Bakkendorf, 1953).

COMMENT. This species is evidently very local and confined to undisturbed marshy localities.

Aprostocetus (Ootetrastichus) longulus (Erdös) **comb. rev.**

(Figs 117, 118)

Gyrolachnus longulus Erdös, 1954: 365. Holotype ♀, HUNGARY: Szakmár, 5.vii.1943 (*J. Erdös*) (TM) [examined].

Tetrastichus longulus (Erdös) Bouček, 1961: 23; Domenichini, 1966*a*: 135; 1966*b*: 38; Kostjukov, 1978*b*: 455–456.
Aprostocetus longulus (Erdös) Graham, 1961*a*: 44.

As the description and figure published by Erdös (1954: 365, fig. 19) hardly bring out the salient features of this very distinctive species, I give a full redescription drawn from the holotype and an Irish ♀ which is in a very good state of preservation.

♀ (Fig. 118). Head 1·2 times as broad as mesoscutum, twice as broad as long; temples 0·2 length of eyes, rounded; POL equal to OOL, OOL about 4 times OD. Eyes about 1·25 times as long as broad, separated by 1·2 times their length, with rather long setae. Frons with median carina. Head in front view oval with genae curved. Vertex with a number of long erect setae, the longest nearly as long as an eye. Malar space 0·62 length of eye, sulcus nearly straight. Mouth 1·25 malar space. Antenna (Fig. 117) with scape 1·1 times length of eye, reaching well above vertex; pedicellus plus flagellum 1·9 times breadth of mesoscutum; pedicellus about 2·8 times as long as broad, equal in length to F1; funicle proximally distinctly more slender than pedicellus, thickening distad, its segments subequal in length, F1 nearly 4 times, F2 3·5 times, F3 about 2·5 times, as long as broad; clava 3·8 times as long as broad, broader than F3, as long as F2 plus F3, its dorsal edge curved; sensilla sparse, mostly outstanding; flagellum with long outstanding setae. Thorax 1·8–1·9 times as long as broad, moderately arched, propodeal slope about 45°. Pronotum with row of long erect setae near hind margin. Mid lobe of mesoscutum about as long as broad, convex, with 3 very long erect adnotaular setae on each side. Scutellum slightly broader than long, moderately convex; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space fully twice as long as broad; setae very long, anterior pair slightly before the middle. Dorsellum twice as broad as long, nearly smooth, its hind edge strongly curved. Propodeum slightly longer than dorsellum; callus with 2 setae. Legs moderately long, very slender; hind coxae about 2·5 times as long as broad, nearly smooth; hind femora about 5 times as long as broad; spur of mid tibia 0·5 length of basitarsus. Forewing about 3·3 times as long as broad; costal cell 20 times as long as broad; *M* much longer than costal cell, 5·3 times length of *ST*, its front edge with about 15 very long setae; *ST* at about 45°; speculum rudimentary, wing beyond it thicky pilose; cilia very long even on costal margin, longest 0·33 breadth of wing. Hindwing very narrow, very strongly acute; cilia about 1·5 times breadth of wing. Gaster longer than head plus thorax, with numerous very long outstanding setae; last tergite with a short triangular basal portion, the rest compressed and sublinear; other details as in the figure.

Body black with bronze or greenish bronze tint. Antennae fuscous. Coxae back, trochanters whitish, femora black, tibiae and tarsi brown to fuscous. Tegulae black. Wings grey-tinged, venation fuscous. Length 1·35–1·40 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. **Hungary**: 1 ♀ (holotype), Szakmár (TM). **Ireland**: 1 ♀, South Tipperary, Ballinacourty, at edge of pond, 11.vi.1944 (*A. W. Stelfox*) (BMNH).

HOST. Unknown.

Aprostocetus (Ootetrastichus) graciliclava sp. n.

(Fig. 116)

♀. Head much collapsed. Frons with median line. Antenna (Fig. 116) characteristic; scape slightly shorter than eye; pedicellus plus flagellum 1·45–1·60 breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, at least very slightly shorter than F1; funicle very slender, proximally not quite as stout as pedicellus, hardly thickening distad, its segments equal in length, or the third a little shorter than the others; F1 2·8–3·9 times, F3 2·6–3·0 times, as long as broad; clava slightly broader than F3, 4·3–4·9 times as long as broad, tapering though not acute, its segments somewhat longer than broad, spine very short; flagellum with short inconspicuous pilosity. Thorax about 1·5 times as long as broad. Mid lobe of mesoscutum about as long as broad, shiny, with extremely fine engraved reticulation; 3 adnotaular setae on each side. Scutellum hardly broader than long; submedian lines slightly nearer to sublaterals than to each other, enclosing a space about twice as long as broad; anterior setae in middle. Propodeum hardly as long as dorsellum, shiny with obsolescent sculpture; spiracles very small, close to metanotum; callus with 2 setae. Legs of medium length, rather slender; hind femora at least 4 times as long as broad; spur of mid tibia about

0·5 length of basitarsus. Forewing 2·2–2·3 times as long as broad; costal cell 14–16 times as long as broad, shorter than *M*; *SM* with 2 dorsal setae; *M* 3·1–3·8 times length of *ST*, its front edge with 9–13 setae; *ST* at 50°, thickening gradually to form a rather small stigma; speculum very small, wing beyond it moderately thickly pilose; cilia 0·27–0·50 length of *ST*. Hindwing acute; cilia 0·33–0·40 breadth. Gaster somewhat collapsed but probably ovate when not distorted, about as long as head plus thorax; last tergite about as long as broad; ovipositor sheaths very slightly projecting.

Body black with weak bronze, greenish and bluish tints; antennae black; coxae and femora black, the latter narrowly pale at tips; trochanters and tibiae fuscous, bases and tips of tibiae sometimes paler, tarsi testaceous proximally, darkening to fuscous at tips; tegulae black; wings grey-tinged, venation brownish. Length 0·9–1·2 mm.

♂. Unknown.

MATERIAL EXAMINED

4 ♀. Holotype ♀, **Greece**: Fthiotis, 3 km SW. of village Timfristos, 10.vi.1982 (*R. Danielsson*) (ZI).

Paratypes. **Greece**: 1 ♀, same data as holotype (BMNH); 2 ♀, Evritania, Mt Timfristos, 4 km E. of Karpinisi, 11.vi.1982 (*R. Danielsson*) (ZI).

HOST. Unknown.

COMMENT. This species is recognizable by the very slender antennal clava and dark legs.

Aprostocetus (Ootetrastichus) mycerinus (Walker) **comb. rev.**

(Figs 120–122, 138, 565, 696)

Cirrospilus Mycerinus Walker, 1839*b*: 350. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*a*: 44) [examined].

Aprostocetus quadriannulatus Kurdjumov, 1913: 252. ? Syntypes ♀ WEST GERMANY: Aachen (? NM) [not examined]. [Synonymized by Domenichini, 1966*b*: 41.]

Aprostocetus mycerinus (Walker) Graham, 1961*a*: 44.

Tetrastichus mycerinus (Walker) Domenichini, 1966*a*: 137; 1966*b*: 41.

Tetrastichus acuminatellus Erdös, 1969: 47. LECTOTYPE ♀, HUNGARY: Szeremle, 14.vi.1960 (TM), here designated [examined]. **Syn. n.**

There are two ♀ syntypes of *Tetrastichus acuminatellus* Erdös in the Erdös collection (TM), both from Szeremle. The lectotype is labelled 'Szeremle 1960.vi.14. dr. Erdös; Salix alba L; coll J. Erdös'.

♀. Head 1·1–1·2 times as broad as mesoscutum, about 2·2 times as broad as long; POL 1·2–1·3 OOL; OOL 1·6–1·7 OD; temples extremely short. Frons with median line or ridge. Antenna (Fig. 120) with scape slightly shorter than eye but (unless head is distorted) reaching above vertex; pedicellus plus flagellum nearly twice breadth of mesoscutum; pedicellus 2·2–2·4 times as long as broad, obviously shorter than F1; anelli (Fig. 696); funicle proximally barely as stout as pedicellus, thickening slightly distad; F1 3·0–5·0 times as long as broad and 1·4–1·8 times length of pedicellus, F2 3·3–3·7 times, F3 2·7–3·5 times, as long as broad; clava slightly broader than F3, 4·0–5·5 times as long as broad, distinctly shorter than F2 plus F3. Thorax moderately arched dorsally. Mid lobe of mesoscutum usually with 3 setae (rarely 4, occasionally 2 in small specimens) on each side. Scutellum hardly broader than long, strongly convex; submedian lines about equidistant from sublateral lines and from each other, enclosing a space 2·6–2·8 times as long as broad; anterior setae slightly to rather distinctly behind middle. Propodeal callus with 2 setae. Legs rather slender; spur of mid tibia about 0·5 length of basitarsus. Forewing (Fig. 121) strongly broadened distally, only 2·05–2·20 times as long as broad, its apical margin tending to be very slightly truncate; *SM* usually with 2, rarely 3, dorsal setae; *M* 3·2–3·5 times length of *ST*; *ST* at 35°–40°; speculum very small; cilia usually shorter than *ST* (as long as *ST* in a dwarf). Gaster (Fig. 122) lanceolate, acuminate, including ovipositor sheaths 1·3–1·5 times as long as head plus thorax; basal tergite bare except at sides; last tergite distinctly longer than broad (up to 1·7 times); ovipositor sheaths exserted to a length equal to 0·25–0·30 length of hind tibia.

Head and thorax varying from bronze-green through green to blue-green, these tints brightest on dorsum; gaster more bronze, with weaker metallic tints. Antennae brown or sordid testaceous, the scape and pedicellus testaceous beneath. Hind coxae usually mainly dark, fore and mid coxae testaceous, or darkened proximally; hind femora broadly infuscate medially, or mainly black; legs otherwise testaceous with fourth tarsomere brown. In very dark ♀ from Britain the fore and mid femora are slightly infuscate. Tegulae brown, or partly testaceous. Wings hyaline or faintly yellowish, venation testaceous to brown. Length 1·35–2·20 mm.

♂. Antenna (Fig. 138) with scape about 2·6 times as long as broad, hardly reaching above vertex, its ventral plaque extending more than half-way down; pedicellus plus flagellum nearly 2·5 times breadth of mesoscutum; pedicellus about twice as long as broad and about 0·6 length of F1; funicle proximally probably about as broad as pedicellus (a little flattened in the specimen figured), its segments subequal in length, F1 about 3 times as long as broad, following three segments also about 3 times; clava about 6 times as long as broad, about as long as F3 plus F4; funicular segments, and first claval segment, each with 2–3 whorls of long and strongly outstanding setae. Gaster oblong, about as long as but narrower than thorax, with a ventral plica. Genitalia (Fig. 565).

Colour as in ♀ but gaster with a yellowish translucent subbasal spot.

MATERIAL EXAMINED

1 ♂, 33 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Hungary**, **Ireland**.

Also recorded from **Italy** by Domenichini (1966*a*) (material not seen).

HOST. Unknown.

Aprostocetus (Ootetrastichus) eupatorii Kurdjumov

(Figs 119, 137, 564)

Aprostocetus eupatorii Kurdjumov, 1913: 252. Lectotype ♀, WEST GERMANY: Aachen (*Förster*) (ZIL), designated by LaSalle (1986: 600) [examined].

Tetrastichus eupatorii Kurdjumov; LaSalle, 1986: 600.

Recently LaSalle kindly let me examine the two ♀ syntypes of *eupatorii* which he had on loan. The identity of *eupatorii* has hitherto been problematic. I had already prepared a description of a supposedly new species which I now find to be *eupatorii*; this description fits the syntypes and Kurdjumov's name has accordingly been substituted. The name had been applied in MS by Förster but he never published a description.

♀. Head slightly broader than mesoscutum, twice as broad as long; temples 0·2 length of eyes, rounded; POL about equal to OOL. Frons with median line. Antenna (Fig. 119) with scape slightly shorter than eye but reaching distinctly above vertex; pedicellus plus flagellum nearly twice breadth of mesoscutum; pedicellus much shorter than F1, about 2·5 times as long as broad; funicle proximally more slender than pedicellus but thickening slightly distad; F1 6·0–7·0 times, F2 4·0–5·5 times, F3 3·0–3·5 times as long as broad; clava slightly broader than F3, 4·0–4·5 times as long as broad, much shorter than F2 plus F3, with spine very short, apical seta fully as long as spine. Thorax 1·7–1·8 times as long as broad, moderately arched dorsally. Mid lobe of mesoscutum with a subtriangular excision in the middle of its hind margin, from which there is usually some trace of a median line extending forwards for a short distance; 2, rarely 3, adnotaular setae on each side. Scutellum about 1·2 times as broad as long, strongly convex; submedian lines about equidistant from each other and from sublateral lines, enclosing a space 3–4 times as long as broad; anterior setae in or slightly behind middle. Propodeum about as long as dorsellum; callus with 2 setae. Legs moderately long and slender; hind femora hardly 4 times as long as broad; spur of mid tibia about 0·5 length of basitarsus. Forewing 2·6–2·8 times as long as broad; *SM* with 2 dorsal setae; *M* 4·0–4·7 times length of *ST*, the latter at 35°–40°; speculum very small, wing beyond it moderately thickly pilose; cilia somewhat longer than *ST*. Gaster lanceolate, acuminate, including ovipositor sheaths 1·5–1·7 times length of head plus thorax; basal tergite bare except at sides; last tergite slightly longer than broad; ovipositor sheaths projecting to a length 0·33–0·5 that of hind tibia.

Body a rather dark green or blue-green; some parts, especially of head and gaster, often more bronze. Antennae testaceous, or with funicle and clava brown to fuscous. Hind coxae usually partly to mainly dark, legs otherwise testaceous with only the pretarsus of all legs brown (sometimes the mid coxae more or less dark). Tegulae testaceous to brownish. Wings subhyaline, venation yellowish. Length 2·1–2·4 mm.

♂. Antenna (Fig. 137) inserted high on head, about level with middle of eyes; scape robust, slightly longer than eye, reaching far above vertex, ventral plaque extending from near apex to more than half-way down; pedicellus plus flagellum nearly 3 times breadth of mesoscutum; pedicellus less than half length of F1;

funicle rather more slender than that of ♀ and hardly thickening distad; F1 7·0–8·0 times, F2 about 6·5 times, F3 6·0–6·5 times, F4 4·0–4·5 times as long as broad; clava 8·0–8·5 times as long as broad, very acute, with a long spine; each segment of flagellum with 2 or 3 whorls of long, strongly outstanding setae. Forewing a little less elongate than in ♀. Gaster oblong, nearly as broad as, and slightly longer than thorax, with ventral plica. Genitalia (Fig. 564).

In one specimen the gaster has a faint paler subbasal spot.

MATERIAL EXAMINED

5 ♂, 14 ♀. **Czechoslovakia**: 4 ♂, 5 ♀, Bohemia, Velký Vřešťov, viii.1953 (*Bouček*) (BMNH); 1 ♂, 2 ♀, Nový Hradec Králové, Cikán, 21.viii.1955, 2 ♀, Hradec Králové, Piletice, 9.viii.1953, 1 ♀, Věkoše, 18.vii.1955 (*Bouček*) (BMNH). **West Germany**: 2 ♀ (syntypes), Aachen (Förster) (ZI). **Italy**: 1 ♀, Superga, near Torino, 15.ix.1969 (*Bouček*) (BMNH). **Yugoslavia**: 1 ♀, Draževac, 7.viii.1979 (*Mihajlović*) (BMNH).

HOST. Unknown.

COMMENTS. As this species has only recently been recognized I have given detailed locality records.

This species is close to *mycerinus* from which it differs in both sexes by its longer and narrower wings, pale hind femora, and rather greater size. The ♀ also differs from that of *mycerinus* in having rather more slender flagellum, longer funicular segments, usually fewer adnotaular setae and somewhat longer gaster with more strongly projecting ovipositor sheaths. The ♂ also differs from that of *mycarinus* in having the antennal scape reaching well above the vertex, the flagellum much more slender, and the funicular segments and clava relatively longer.

Aprostocetus (Ootetrastichus) leptocerus sp. n.

(Fig. 125)

♀. Resembles *eupatorii* in its very long antennae but differs as follows. Antenna (Fig. 125) with scape slightly longer than eye, about 4·5 times as long as broad, reaching far above vertex; pedicellus plus flagellum 2·35 times breadth of mesoscutum; funicular segments relatively longer, F1 8·5 times, F2 6·0 times, F3 4·5 times, as long as broad; clava nearly 6 times as long as broad. Mid lobe of mesoscutum with 3 adnotaular setae on each side. Scutellum with anterior pair of setae placed distinctly behind the middle. Propodeum twice as long as dorsellum; callus with 4 setae. Legs even longer and more slender; hind femora near 6 times as long as broad; spur of mid tibia slightly less than half length of basitarsus. Forewing about 2·5 times as long as broad, reaching far beyond tip of gaster; *M* 4 times length of *ST*, its front edge with 14 setae. Gaster ovate, acute but not acuminate, not quite as long as head plus thorax; last tergite slightly shorter than its basal breadth; ovipositor sheaths projecting to a length only about 0·33 length of last tergite.

Bronze-black; antennae fuscous, scape testaceous except its dorsal edge, pedicellus paler below and at tip; fore and mid coxae dusky at base, hind coxae fuscous in proximal half, legs otherwise testaceous with all tibiae brown; tegulae brownish testaceous; wings slightly, uniformly infumate, venation brownish. Length 1·7 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Var, St Tropez, 16.vi.1980 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Ootetrastichus) ovivorax (Silvestri) comb. n.

(Figs 127, 139, 568)

Tetrastichus (Geniocerus) ovivorax Silvestri, 1920: 244. Syntypes ♀, ITALY: Piedimonte d'Alife (Caserta), S. Pietro Avellana (Campobasso) and Bevagna (Perugia) (IEA) [not examined].

Tetrastichus ovivorax Silvestri; Domenichini, 1966*a*: 137; 1966*b*: 43; Kostjukov, 1978*b*: 456, in part (excluding synonym).

♀. Head 1·15 times as broad as mesoscutum, about 2·2 times as broad as long; temples 0·2 length of eyes, curved and receding; POL about 1·6 OOL; OOL 1·5 OD. Frons with median line. Antenna (Fig. 127) with scape shorter than eye, hardly reaching median ocellus; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus slightly more than twice as long as broad, somewhat shorter than F1; funicle proximally slightly stouter than pedicellus, hardly thickening distad; funicular segments decreasing slightly in length, F1 2·7–3·0 times, F2 2·0–2·3 times, F3 1·8–2·0 times, as long as broad; clava slightly broader than F3, 2·8–3·2 times as long as broad, slightly shorter than F2 plus F3; sensilla standing out at about 30°. Thorax moderately arched. Mid lobe of mesoscutum with (2–)3 adnotaular setae on each side. Scutellum only slightly broader than long, fairly strongly convex; submedian lines not or only slightly nearer to sublateral lines than to each other, enclosing a space 2·3–2·7 times as long as broad; anterior setae about in middle. Propodeum barely as long as dorsellum; callus with 2 setae. Legs moderately long and slender; hind femora about 3·6 times as long as broad; spur of mid tibia 0·5 length of basitarsus. Forewing 2·3–2·5 times as long as broad; *SM* with 2 dorsal setae; *M* 3·4–3·8 times length of *ST*, its front edge with 10–13 setae; *ST* at 45°–47°; speculum small but distinct; cilia 0·50–0·75 length of *ST*. Gaster lanceolate, acuminate, including ovipositor sheaths 1·3–1·5 times as long as head plus thorax; exserted part of ovipositor sheaths 0·22–0·35 length of hind tibia, shorter than, or at most as long as, the postcercale.

Body green to greenish blue; mouth-edge at least narrowly testaceous, often also orbits and sutures of frons, sometimes the whole head except vertex and occipital surface, yellowish. Scapular flanges yellowish. Base of gaster often obscurely testaceous. Antennae brown to fuscous; scape and pedicellus usually more or less testaceous beneath, pedicellus sometimes also apically. Hind coxae dark, mid coxae usually partly to mainly so, fore coxae usually yellow though sometimes dark over proximal half; rest of legs yellow, but the tarsi usually becoming progressively darker from the second tarsomere on, their tips fuscous. Tegulae yellow with darker hind edge. Wings hyaline, venation yellowish or testaceous. Length 1·6–2·3 mm.

♂. Antenna (Fig. 139) with scape nearly as long as eye, not reaching vertex, its central plaque above middle and about 0·3 length of scape or slightly less; pedicellus plus flagellum 2·5–2·9 times breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, about half as long as F1; funicle proximally fully as stout as, or slightly stouter than, pedicellus, tending ot taper slightly distad, its segments decreasing very slightly in length, F1 3·0–3·5 times as long as broad, F2 and F3 of similar proportions, F4 about 3·0 times as long as broad; clava very slightly broader than F4, 5·0–5·5 times as long as broad, slightly shorter than or about as long as F3 plus F4, its first segment 1·6–2·0 times as long as broad, second shorter; sensilla long, setiform, standing out at 45°–60°. Gaster oblong, nearly as long as but narrower than thorax, with ventral plica. Genitalia (Fig. 568).

Ventral plica of gaster usually partly translucent; dorsum of gaster sometimes with a more or less distinct yellowish subbasal spot. Hind femora in one ♂ slightly darkened.

MATERIAL EXAMINED

5 ♂, 18 ♀. **France, Germany, Italy, Yugoslavia.**

HOST. *Oecanthus pellucens* (Scopoli).

Aprostocetus (Ootetrastichus) polygoni (Erdös) **sp. rev., comb. rev.**

(Figs 126, 128, 140, 567)

Geniocerus polygoni Erdös, 1954: 358. LECTOTYPE ♀, HUNGARY: Kalocsa, 24.vii.1946 (TM), here designated [examined].
Aprostocetus polygoni (Erdös) Graham, 1961*a*: 44.
Tetrastichus polygoni (Erdös) Domenichini, 1966*a*: 135.

Geniocerus polygoni was synonymized with *Tetrastichus ovivorax* Silvestri by Domenichini (1966*b*: 43). I have re-examined the syntypes of *polygoni* and consider it to be a valid species.

♀. Differs from that of *ovivorax* as follows. Antenna (Fig. 126) with pedicellus plus flagellum 1·75–1·85 times breadth of mesoscutum; funicle slender, only just as stout as pedicellus; F1 about 1·3 times length of pedicellus and 3·0–3·5 times as long as broad, F3 2·2–3·0 times as long as broad; clava nearly or quite 4 times as long as broad. Mid lobe of mesoscutum with 2 adnotaular setae on each side. Scutellum with submedian lines slightly nearer to sublateral lines than to each other, enclosing a space hardly more than twice as long as broad. Forewing about 2·6 times as long as broad; *M* 5·0–6·0 times length of *ST*, its front edge with 10–15 setae; *ST* at about 50°. Gaster (Fig. 128).

Body entirely metallic, green to blue-green.

♂. Differs from ♀ as follows. Antenna (Fig. 140) with scape longer than eye, reaching above vertex, about 3·5 times as long as broad, ventral plaque about 0·27 length of scape, ventral edge also with a long seta somewhat below the middle and 2–3 shorter setae below it; pedicellus plus flagellum about 2·5 times breadth of mesoscutum; funicle proximally barely as stout as pedicellus, tapering slightly distad; F1 twice as long as pedicellus and about 5 times as long as broad, F2 hardly shorter and nearly 4 times as long as broad, F3 hardly shorter than F2 and 3·5 times, F4 slightly shorter than F3 and 3·5 times as long as broad; clava about 7 times as long as broad, slightly longer than F3 plus F4, its first segment not broader than F4 and nearly 3 times as long as broad, separated by a slight constriction from the second segment which is slightly broader but a little shorter; spine long; sensilla long and setiform, in 2 whorls on each segment, standing out at 45°. Gaster oblong, about as long as but narrower than thorax. Genitalia (Fig. 567).

Tegulae with a dark spot posteriorly. Antennae testaceous with dorsal edge of scape slightly infuscate, clava fuscous. Forewing with a very distinct infumate band along its apical margin.

MATERIAL EXAMINED

1 ♂, 5 ♀. **Czechoslovakia**: 1 ♂, Bohemia, Týniště nad Orlicí, 27.vii.1952, 1 ♀, 14.ix.1944, 1 ♀, 24.ix.1944, 1 ♀, Hradec Králové, 12.viii.1957 (*Bouček*) (BMNH). **Hungary**: 2 ♀, Kalocsa, 24.vii.1946 (lectotype), 4.ix.1946 (paralectotype) (*Erdös*) (TM).

HOST. Unknown.

COMMENTS. The ♂ of *polygoni* differs from that of *ovivorax* in having the antennal scape longer, with shorter ventral plaque; flagellum more slender; clava at least slightly shorter than F3 plus F4, with C1 and C2 relatively shorter; submedian lines of scutellum slightly nearer to sublateral lines and diverging slightly caudad; forewing narrower; head and gaster wholly metallic; apical margin of forewing slightly infumate; flagellum bicoloured with pale funicle and dark clava.

Aprostocetus (Ootetratichus) citripes (Thomson) **comb. rev.**

(Figs 129, 143, 566)

Tetrastichus citripes Thomson, 1878: 292; Domenichini, 1966*a*: 136; 1966*b*: 25. Lectotype ♀, SWEDEN: Holmeja (ZI), designated by Graham (1961*a*: 44) [examined].
Aprostocetus citripes (Thomson) Graham, 1961*a*: 44.

♀. Head slightly broader than mesoscutum, about twice as broad as long. Frons with median line. Antenna (Fig. 129) with scape shorter than an eye, not reaching median ocellus; pedicellus plus flagellum 1·25–1·35 times breadth of mesoscutum; pedicellus slightly shorter than, or as long as, F1; funicle proximally not stouter than pedicellus, hardly thickening distad; funicular segments becoming progressively shorter, F1 2·50–3·25 times, F2 1·7–2·1 times, F3 1·4–1·7 times, as long as broad; clava slightly broader than F3, 2·9–3·5 times as long as broad, somewhat longer than F2 plus F3; sensilla decumbent or virtually so. Thorax moderately arched dorsally. Mid lobe of mesoscutum usually with 3 (rarely 2) adnotaular setae on each side. Scutellum only a little broader than long; submedian lines distinctly nearer to sublateral lines than to each other; anterior setae slightly before the middle. Propodeal callus with 4–6 setae. Legs rather slender; hind femora about 4 times as long as broad; spur of mid tibia about 0·55 length of basitarsus. Forewing 2·3–2·5 times as long as broad; *SM* with 2 dorsal setae; *M* 3·5–4·5 times length of *ST*; speculum absent or rudimentary; cilia as long as or slightly shorter than *ST*. Gaster long-ovate to lanceolate, usually acuminate and 2·4–2·9 times as long as broad (rarely only 2·2 times and not acuminate) longer than head plus thorax; basal tergite with a transverse row of setae just before its hind margin; last tergite usually at least slightly (and up to 1·3 times) as long as broad, rarely only as long as broad; ovipositor sheaths projecting slightly.

Body green to blue-green. Antennae fuscous, scape yellowish beneath. Coxae green; legs otherwise (and sometimes fore coxa partly) yellow; fore tarsi fuscous, mid and hind tarsi darkening from second tarsomere to apex; occasionally the tips of all the tibiae are narrowly brownish (much as in *rufus*). Tegulae black with metallic tint. Wings hyaline, venation yellowish or testaceous. Length 1·2–1·6 mm.

♂. Antenna (Fig. 143) with scape slightly shorter than eye, not reaching above vertex, about 3 times as long as broad, with ventral plaque about 0·25 length of scape; pedicellus plus flagellum about 1·5 times breadth of mesoscutum; pedicellus about 2·5 times as long as broad, slightly to distinctly longer than F1;

funicle proximally more slender than pedicellus, thickening slightly distad, its segments decreasing slightly in length, F1 2·6–3·5 times, F2 2·2–2·3 times, F3 about twice, F4 1·6–1·7 times as long as broad; clava slightly broader than F4, slightly longer than F3 plus F4, 3·3–3·5 times as long as broad; sensilla with moderately long bases and about equally long projecting blades. Genitalia (Fig. 566).

Colour as in ♀ but fore coxae more or less yellow; antennal scape and pedicellus mainly to wholly yellow.

MATERIAL EXAMINED

4 ♂, 10 ♀. **Czechoslovakia**, **Italy**, **Sweden**.

HOST. Unknown.

Aprostocetus (Ootetrastichus) pseudopodiellus (Bakkendorf) **comb. rev.**

(Fig. 131)

Tetrastichus pseudopodiellus Bakkendorf, 1953: 558–564; Domenichini, 1966*a*: 136; 1966*b*: 46; Kostjukov, 1978*b*: 456. Holotype ♂, DENMARK: North Sealand, Tibberup Bridge by Hjortespring, 9.x.1943 (Coll. O. Bakkendorf) [not examined].

Aprostocetus pseudopodiellus (Bakkendorf) Graham, 1961*a*: 44.

Bakkendorf (1953: 562–563, figs 31.40, 31.41) was able to give only outline sketches of the ♀ antenna and gaster, drawn from a pupa which was subsequently lost. A full description of the ♀ is now provided.

♀. Antenna (Fig. 131) with scape very slightly longer than an eye, about 4·5 times as long as broad, reaching above level of vertex, its outer surface with 2 longitudinal rows of setae, the usual row on the front edge, and another somewhat inside the edge; pedicellus plus flagellum 1·20–1·25 times breadth of mesoscutum; pedicellus varying from slightly shorter, to slightly longer, than F1; funicle proximally barely as stout as pedicellus and hardly thickening distad; funicular segments subequal in length, F1 1·8–2·3 times, F2 2·0–2·3 times, F3 1·8–2·0 times, as long as broad; clava slightly broader than F3, 2·8–3·1 times as long as broad, as long as or slightly longer than F2 plus F3. Thorax somewhat flattened dorsoventrally, broader than high; propodeal slope 30°–40°. Mid lobe of mesoscutum with 2–3 adnotaular setae on each side. Scutellum very distinctly broader than long, rather weakly convex in long axis; submedian lines nearer to sublateral lines than to each other; anterior setae in or very slightly before the middle. Propodeal callus with 2 setae. Legs with fourth tarsomere of fore tarsus somewhat swollen, nearly as long as second plus third tarsomeres. Forewing 2·8–3·2 times as long as broad; *SM* usually with 2 (rarely 3) dorsal setae; *M* 4·0–4·5 times length of *ST*; cilia as long as or slightly longer than *ST*. Gaster oblong-lanceolate, hardly acuminate, slightly longer than head plus thorax; basal tergite bare except at sides; last tergite at least very slightly shorter than its basal breadth; ovipositor sheaths projecting very slightly.

Golden- to blue-green, the head and gaster often more or less suffused with bronze. Antennae testaceous or brownish testaceous, scape paler beneath. Coxae dark, fore coxae partly to wholly yellow, mid coxae usually partly pale; legs otherwise yellow with fourth tarsomere brown. Tegulae partly or mainly yellow. Wings subhyaline, venation pale yellow. Length 1·50–1·65 mm.

♂. I have not seen this sex. Bakkendorf's (1953) description is very detailed and, together with his good figures, should make its recognition easy.

MATERIAL EXAMINED

Czechoslovakia: 1 ♀, Bohemia or., Břehyně near Doksy, 30.vi.1957, 1 ♀, 12.vii.1959, 4 ♀, 17.vii.1963 (*Bouček*) (BMNH), 9 ♀, 17.vii.1963 (*Graham*) (BMNH), 1 ♀, vii.1962 (*A. Hoffer*) (MVG); 2 ♀, Řevničov, 14.viii.1955 (*Bouček*) (BMNH); 1 ♀, Nový Hradec Králové, 12.viii.1957 (*Bouček*) (BMNH).

HOST. *Lestes* sp., a solitary endoparasite of the egg.

Aprostocetus (Ootetrastichus) mandanis (Walker) **comb. rev.**

(Figs 130, 142, 146, 148, 572)

Cirrospilus Mandanis Walker, 1838*b*: 202. Lectotype ♀, GREAT BRITAIN (BMNH) designated by Graham (1961*a*: 44) [examined].

Anellaria conomeli Bakkendorf, 1934: 9–15. Holotype ♀, DENMARK: Dyrehaven (ZM), [examined]. [Synonymized by Graham, 1961*a*: 44.]

Tetrastichus conomeli (Bakkendorf) 1953: 564–570.
[*Geniocerus citripes* (Thomson); Erdös, 1954: 358. Misidentification.]
Aprostocetus mandanis (Walker) Graham, 1961*a*: 44.
Tetrastichus mandanis (Walker) Domenichini, 1966*a*: 137; 1966*b*: 39; Kostjukov, 1978*b*: 456.

♀. Differs from that of *crino* as follows. Antenna (Fig. 130) with clava on average rather narrower, 3·5–4·0 times as long as broad, as long as or hardly longer than F2 plus F3; F1 fully as long as, to 1·3 times as long as, pedicellus. Forewing not varying much in size, always well developed, 2·5–2·8 times as long as broad; *ST* at a less acute angle, 42° to 47°, lower edge of *M* not forming a quite even curve with *ST*. Head in front view (Fig. 148). Propodeum (Fig. 146).

Colour as in *crino* but funicle and clava (except in tenerals) brown to blackish; pedicellus sometimes more or less darkened; metallic tints of body tending to be stronger, especially on the head which is wholly metallic. Size rather greater, length 1·2–1·5 mm.

♂. Antenna (Fig. 142 with scape hardly shorter than an eye, not reaching above vertex, slightly more than 3 times as long as broad, its ventral plaque about 0·25 length of scape and placed in upper half; pedicellus plus flagellum 1·8–2·0 times breadth of mesoscutum; pedicellus about 2·5 times as long as broad, slightly longer than F1; funicle not quite, or only just, as stout as pedicellus, of uniform thickness; its segments decreasing very slightly in length or subequal, F1 2·4–2·65 times, F4 1·6–2·0 times, as long as broad; clava slightly broader than funicle, 4·5–5·0 times as long as broad, slightly to distinctly longer than F3 plus F4, its first and second segments slightly to distinctly longer than broad, terminal spine long; sensilla standing out at 30° to 35°. Eyes rather small, hardly 1·2 times as long as broad. Gaster elliptical, as long as and nearly or quite as broad as thorax, with ventral plica. Genitalia (Fig. 572) with digitus unique in the species-group, narrow, directed caudad, tapering slightly, their hind edge with an unusually long spine.

Body bright golden to blue-green; mouth-edge sometimes more or less testaceous; gaster usually with a more or less developed testaceous subbasal spot. Hind coxae dark, fore and mid coxae usually yellow though sometimes darkened basally; legs otherwise yellow with tarsi darker apically, becoming brown at tips. Antennal scape and pedicellus yellow, sometimes darkened dorsally, ventral plaque of scape dark; flagellum brownish testaceous to fuscous. Tegulae yellowish, darker posteriorly. Wings hyaline or faintly yellowish, venation yellowish testaceous. Length 1·1–1·3 mm.

MATERIAL EXAMINED

12 ♂, many ♀. **Denmark**, **Great Britain**, **Hungary**, **Portugal**, **Sweden**.

HOST. *Euconomelus lepidus* (Boheman) (Bakkendorf, 1933).

Aprostocetus (Ootetrastichus) crino (Walker) **comb. rev.**

(Figs 123, 124, 132, 144, 147, 570)

Cirrospilus Crino Walker, 1838*a*: 382; Hincks, 1956: 306–307. Lectotype ♂, GREAT BRITAIN (BMNH), designated by Graham (1961*a*: 44) [examined].
Tetrastichus (Geniocerus) dispar Silvestri, 1920: 249. Syntypes ♂ ♀, ITALY: S. Pietro Avellana (Campobasso), 9–14.vi.1919, from stems with eggs of *Oecanthus* (IEA) [not examined].
Tetrastichus oecanthivorus Gahan, 1932: 743. [Replacement name for *dispar* Silvestri, 1920.]
Pachyscapus crino (Walker) Erdös, 1954: 364.
Tetrastichus dubius Bakkendorf, 1955: 8. Holotype ♂, ICELAND: Sluttnes in Myvatn, 20.viii. (NMG) [not examined]. [Synonymized by Graham, 1961*a*: 44.]
Aprostocetus crino (Walker) Graham, 1961*a*: 44.
Tetrastichus crino (Walker) Domenichini, 1966*a*: 136; 1966*b*: 27; Kostjukov, 1978*b*: 457; Burks, 1979: 993.

♀. Frons without median carina but with a rectangular median area. Antenna (Fig. 132) with scape 3·3–3·7 times as long as broad, slightly shorter than eye, not reaching vertex, its front edge with a few setae; pedicellus plus flagellum 1·4–1·8 times breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, as long as or a little longer than F1; funicle proximally distinctly more slender than pedicellus, hardly thickening distad; funicular segments equal in length, or progressively a little shorter, F1 1·7–3·0 times, F2 1·4–2·0 times, F3 1·2–1·8 times, as long as broad; clava distinctly broader than F3, 2·6–3·0 times as long as broad, at least a little longer than F2 plus F3 and sometimes as long as the whole funicle, with C1 and C2 not longer than broad; sensilla standing out at 30°–45°, their length fully equal to or slightly greater than the breadth of the segments. Thorax 1·6–1·9 times as long as broad; propodeal slope 40°–50°. Mid lobe of mesoscutum with 1–2 (rarely 3) adnotaular setae on each side. Scutellum moderately convex, at most slightly broader than long; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·5 times as long as broad; setae equal, anterior pair about in the middle. Propodeal callus with 2 setae. Legs moderately long and slender, but hind femora rather stout; fourth tarsomere of fore tarsus, including pretarsus, almost as long as second plus third, somewhat thickened. Forewing (Figs 123, 124) narrow, very variable in size, 2·65–3·50 times as long as broad; *SM* with 1–2 dorsal setae; *M* 3·0–4·0 (–4·5) times length of *ST*, its lower edge forming an even curve with lower edge of *ST*, latter at about 40° to costal edge; speculum absent or virtually so; cilia varying greatly, from about 0·6 length of *ST*, to 0·75 breadth of wing. The relative development of the wings is correlated to some extent, though not entirely, with absolute size, large specimens having in general broader wings with shorter cilia, small specimens shorter and narrower wings with long cilia. Some quite large females, however, have relatively short and narrow wings with moderately long cilia. Gaster variable in length, ovate to lanceolate, sometimes slightly longer than head plus thorax and somewhat acuminate, sometimes hardly as long as head plus thorax and not acuminate; ovipositor sheaths projecting at most slightly beyond tip of last tergite, sometimes not projecting.

Variable in colour. Body bronze-green, green, or (less often) blue-green; gaster with weaker tints, most often obscurely testaceous at base; mouth-edge usually more or less testaceous. Antennae usually testaceous, rarely scape and pedicellus infuscate dorsally. Hind coxae dark, mid coxa dark or partly pale, fore coxae varying from wholly testaceous to wholly dark; rest of legs usually yellowish testaceous with fourth tarsomere of fore legs brown, pretarsi or whole fourth tarsomere of mid and hind legs brownish; occasionally hind femora more or less infuscate, rarely all the femora more or less so; in dark specimens the tarsi may be mainly fuscous. Tegulae usually yellowish, rarely darkened posteriorly. Wings hyaline or faintly yellowish, venation testaceous or (in very dark forms) brown. Length 0·75–1·55 mm.

♂. Differs from ♀ as follows. Antenna (Fig. 144) with scape strongly swollen, 1·8–2·6 times as long as broad and 1·4–1·5 times as long as eye, reaching above vertex, with a very long but rather indistinct ventral ridge; pedicellus plus flagellum 1·60–1·65 breadth of mesoscutum; pedicellus 1·6–1·8 times as long as broad, slightly to quite distinctly longer than F1; funicle much more slender than pedicellus, cylindrical; funicular segments subequal in length, oval, 1·6–2·2 times as long as broad; clava as broad as or slightly broader than funicle, 4·0–4·7 times as long as broad, somewhat shorter than or nearly equal to F3 plus F4, with C1 and C2 not or hardly longer than broad; sensilla very slender, nearly as long as the funicular segments, standing out at 30° to 45°. Fourth tarsomere of fore leg (Fig. 147) oblong, moderately stout, including pretarsus about as long as second plus third. Genitalia (Fig. 570).

The following parts of the body are testaceous or yellowish: head entirely, or all except sometimes the vertex and upper part of occipital surface; upper angle of mesopleuron; sometimes prosternum, prepectus, pronotum partly to wholly; base of gaster at least obscurely, but sometimes as much as proximal half clear yellowish. Legs sometimes entirely yellowish but hind coxa usually more or less darkened, mid coxa sometimes so, tips of tarsi more or less darkened, fourth tarsomere of fore legs blackish. Antennae testaceous or brownish testaceous.

MATERIAL EXAMINED

Many ♂, ♀. **Andorra**, **Czechoslovakia**, **Denmark**, **France**, **Great Britain**, **Hungary**, **Iceland**, **Ireland**, **Italy**, **Sweden**, **Yugoslavia**, **North America**.

HOSTS. *Oecanthus pellucens* (Scopoli), *O. nigricornis* Walker, and *O. quadripunctatus* Beutenmüller. None of these hosts occurs in northern Europe so that *crino* must have other hosts in that region.

COMMENTS. On some occasions *crino* appears in vast numbers. For example in England (Oxfordshire, Otmoor) on 18.viii.1959 I swept thousands from a stand of *Carex*, this being only a sample from the swarms present. Males appeared to be almost as numerous as females.

Aprostocetus (Ootetrastichus) ping sp. n.

(Figs 133, 149)

♀. Differs from that of *crino* as follows. Antenna (Fig. 133) with scape more slender, its front edge with numerous setae, also a few setae arising from the outer surface; clava relatively broader and shorter, 2·1–2·3 times as long as broad. Submedian lines of scutellum more distinctly nearer to sublateral lines than to each other, enclosing a space 1·9–2·0 times as long as broad.

♂. Differs obviously from that of *crino* in the form of the fore tarsus (Fig. 149) which has the fourth tarsomere greatly expanded, very broad and lozenge-shaped, strongly flattened, black. Antenna with scape less swollen, 3·0–3·3 times as long as broad, only about 1·2 times as long as eye. Submedian lines of scutellum much nearer to sublateral lines than to each other, enclosing a space 1·8–1·9 times as long as broad.

MATERIAL EXAMINED

4 ♂, 14 ♀. Holotype ♂, **Spain**: Madrid district, El Pardo, 10.vii.1974 (*Bouček*) (BMNH).

Paratypes. 3 ♂, 14 ♀, same data as holotype (BMNH).

HOST. Unknown.

Aprostocetus (Ootetrastichus) ibericus sp. n.

(Figs 145, 571)

♀. Differs from that of *crino* as follows. Antenna with scape about as long as an eye, fully 4 times as long as broad. The following parts of body yellow: head except middle of face and frons, ocellar triangle, much of occipital surface; lateral edge of pronotum, or sides broadly; prosternum partly or wholly; a V-shaped mark on mid lobe of mesoscutum with its base on the scutellar margin, often the scutellar lines and sides, prepectus partly or wholly; about proximal half of gaster dorsally (except sides and sometimes a transverse bar on each segment), most of proximal half of gaster ventrally; in one specimen there are transverse yellowish bands on the tergites in the distal half of the gaster. Length 1·40–1·45 mm.

♂. Differs from that of *crino* as follows. Yellow areas of body more extensive and including sides of pronotum, in one specimen also spots on its dorsal surface; mid lobe of mesoscutum except a large anterior spot; hind margin of scapulae; gaster, except a pair of spots on the sides of the first four tergites and transverse bars on the following segments. The pale areas are a clear citron-yellow, whereas in *crino* they tend towards chrome or even testaceous; the edges of the yellow areas are more sharply defined. The gastral colour pattern is different in *crino*: when extensively yellow the gaster does not show the lateral dark spots of *ibericus*. Antenna (Fig. 145) with scape 1·50–1·75 times as long as broad, with its front edge more strongly curved; pedicellus 2·60–2·75 times as long as broad. Forewing with *M* 4·2–4·9 times length of *ST*. Genitalia (Fig. 571).

MATERIAL EXAMINED

3 ♂, 3 ♀. Holotype ♂, **Spain**: Alicante, Moraira, 17.vi.1973 (*Bouček*) (BMNH).

Paratypes. **Spain**: 1 ♀, Castellón, Benicassim, 22–24.vi.1974 (*Bouček*) (BMNH); 1 ♀, Malaga, Estepona, 29 or 30.vi.1974 (*Bouček*) (BMNH); 1 ♂, Madrid district, El Pardo, 10.vii.1974 (*Bouček*) (BMNH), 1 ♂, Casa de Campo, 15.x.1978 (*Noyes*) (BMNH), 1 ♀, El Escorial, 24.x.1978 (*Noyes*) (BMNH).

HOST. Unknown.

Aprostocetus (Ootetrastichus) viatorum (Graham) comb. n.

(Fig. 134)

Tetrastichus viatorum Graham, 1981: 5–6. Holotype ♀, MADEIRA: Curral dos Romeiros, 13.v.1980 (*Graham*) (UM) [examined].

♀. Nearest to *crino*. For a full description see Graham (1981). Antenna (Fig. 134).

♂. Unknown.

MATERIAL EXAMINED

5 ♀. **Madeira**.

HOST. Unknown.

Aprostocetus (Ootetrastichus) percaudatus (Silvestri)

(Figs 135, 141, 569, 697)

Tetrastichus (*Geniocerus*) *percaudatus* Silvestri, 1920: 241. Syntypes ♀, ITALY: Piedimonte d'Alife (Caserta), 10.vi.1920; Bevagna, 5.xi.1920, from stems of *Melissa* (IEA) [examined].

Tetrastichus percaudatus Silvestri; Domenichini, 1966*a*: 136; 1966*b*: 44; Kostjukov, 1978*b*: 455.

? *Terebratella indica* Shafee & Rizvi, 1984: 377–378. Holotype ♀, INDIA: Bihar, Muzaffarpur, Jhapa, 5.xi.1969 (*S. Adam Shafee*) (ZMA) [not examined].

♀. Head 1·25–1·30 times as broad as mesoscutum, slightly more than twice as broad as long; POL 1·6–1·7 OOL, OOL about 1·5 OD. Eyes 1·25 times as long as broad. Malar space about 0·6 length of eye, sulcus nearly straight. Mouth 1·1 times malar space. Antenna (Fig. 135) with scape nearly as long as eye, reaching slightly above vertex; pedicellus plus flagellum 2·00–2·15 times breadth of mesoscutum; pedicellus nearly or quite twice as long as broad, about or hardly more than half length of F1; anelli (Fig. 697); funicle proximally hardly stouter than pedicellus and hardly thickening distad; F1 3·2–3·8 times, F2 3·0–4·8 times, F3 2·8–3·7 times as long as broad; clava hardly broader than F3, somewhat shorter than F2 plus F3, 3·7–4·8 times as long as broad, with C1 1·6–2·0 times as long as broad, C2 slightly to distinctly longer than broad, spine about 0·25 length of C3; sensilla rather sparse, irregularly distributed, with moderately long bases and long projecting blades. Thorax fully twice as long as broad; propodeal slope about 45°. Pronotum subconical, at least 0·33 length of mesoscutum. Mid lobe of mesoscutum usually a little longer than broad, convex, shiny, with extremely fine and delicately engraved reticulation having elongate areoles; 3–4 adnotaular setae on each side, subequal in length and nearly as long as scutellars. Scutellum about 0·66 length of mesoscutum, about as long as broad, strongly convex, rather more finely and delicately sculptured than mesoscutum; submedian lines about equidistant from each other and from sublateral lines, enclosing a space about 2·5 times as long as broad; setae fine, their length slightly less than distance between submedian lines, anterior pair in or a little in front of middle. Dorsellum almost semicircular, 2·0–2·2 times as broad as long. Propodeum long at sides, even medially as long as or slightly longer than dorsellum, shiny, with fine hardly raised reticulation; median carina distinct, broadening posteriorly; callus with 3–4 setae. Legs long and slender, especially tibiae and tarsi; spur of mid tibia only about 0·33 length of basitarsus which is 7–8 times as long as broad, remaining tarsomeres decreasing in length but all quite elongate, fourth about 4 times as long as broad. Forewing 2·6–3·0 times as long as broad; costal cell 18–20 times as long as broad, distinctly shorter than *M*; *SM* with 3–5 dorsal setae; *M* thin, about 6 times length of *ST*, its front edge with 13–15 fine setae which are shorter than *ST*; *ST* at 40°, very thin proximally but expanding gradually into the small stigma; *PM* rudimentary or a short stub; speculum small, extending as a narrow strip a little way below *M*; wing beyond it moderately thickly pilose; cilia 0·5–0·6 length of *ST*. Hindwing bluntly to sharply pointed; cilia 0·33–0·40 breadth of wing. Gaster proper sublinear, somewhat longer than head plus thorax, slightly narrower than thorax, acute but hardly acuminate; last tergite about as long as broad; postcercale shorter than cerci, which are placed about middle of length of the tergite; projecting part of ovipositor sheaths varying from about 0·7 length of gaster to longer than the whole body, and from 2·05 to 5·00 times length of hind tibia.

Head yellowish with ocellar area and a spot above clypeus black with green tinge; hinder part of genae and temples, and occipital surface more or less, fuscous. Thorax bright green to blue-green; scapular flanges and upper angle of mesopleuron yellow. Gaster green to blue-green, sides with a row of yellowish spots which are sometimes joined; occasionally the tergites are crossed by obscure testaceous bands. Antennae brown to fuscous with scape and pedicellus sometimes paler beneath. Hind coxae coloured like thorax, legs otherwise yellow with fore tarsi brownish, mid and hind tarsi becoming brownish distally; extreme tips of tibiae sometimes faintly brownish. Tegulae yellow, hind edge sometimes brown. Wings hyaline, venation yellowish or pale testaceous. Length of body 1·7–2·0 mm, of body plus ovipositor 2·8–3·8 mm.

♂. Antenna (Fig. 141) with scape as long as eye, reaching distinctly above vertex, about 3 times as long as broad, with ventral plaque slightly more than half length of scape; pedicellus plus flagellum about 3 times breadth of mesoscutum; pedicellus 1·6–1·7 times as long as broad, hardly half as long as F1; flagellum proximally hardly stouter than pedicellus, tapering a little distad; F1 slightly shorter than F2 and about 3 times as long as broad, following segments decreasing slightly in length, F2 about 3·7 times, F3 and F4 about 3·5 times as long as broad; clava as long as F3 plus F4, about 7 times as long as broad, acute, with C1 and C2 subequal in length, each about twice as long as broad, C3 shorter; each segment of funicle and clava with 3–4 irregular whorls of strong setae, their length slightly greater than breadth of segment, standing out at 45°–60°. Genitalia (Fig. 569).

Gaster black, metallic, with yellowish subbasal spot. Length about 1·6 mm.

MATERIAL EXAMINED
1 ♂, 17 ♀. **Czechoslovakia**, **France**, **Italy**, **Spain**, **Yugoslavia**.

HOST. *Oecanthus pellucens* (Scopoli).

COMMENTS. The extent of variation in the length of the ovipositor is extraordinarily great in this species. There is an almost complete gradation in length between the extreme forms. Earlier I thought that more than one species might be involved but I have been unable to find any other characters which correlate with ovipositor length to suggest segregates.

Terebratella indica appears from the description to be a synonym of *percaudatus*.

Subgen. *CORIOPHAGUS* subgen. n.

Type-species: *Cirrospilus eurytus* Walker, 1838. Gender: masculine.

Characters of the subgenus are summarized in the key to subgenera of *Aprostocetus*: females, couplets 5 and 8 (p. 88); and males, couplet 4 (p. 89).

Two species whose biology is known are egg-parasites of Hemiptera (Cicadellidae and Miridae respectively).

Keys to European species of subgenus *Coriophagus*

Females

1 Larger, length 1·7–2·1 mm. At least mouth-edge, dorsellum and upper angle of mesopleuron yellow but usually head and thorax have additional yellow markings. Inner aspect of antennal scape with characteristic, slightly raised and nearly isodiametric reticulation (as in Fig. 151) over about its distal third; proximal part of pedicellus with slightly raised reticulation which tends to form transverse ridges (Fig. 153) .... ***eurytus*** (p. 113)

– Smaller, length 1·0–1·4 mm. Body without yellow markings. Antennal scape and pedicellus with obsolescent sculpture .... ***miridivorus*** (p. 116)

Males

1 Head, thorax and gaster with yellow markings; legs yellow. Inner aspect of antennal scape (Fig. 151) with very slightly raised, isodiametric reticulation; ventral plaque of scape very long; proximal part of pedicellus with slightly raised reticulation which tends to form transverse ridges .... ***eurytus*** (p. 113)

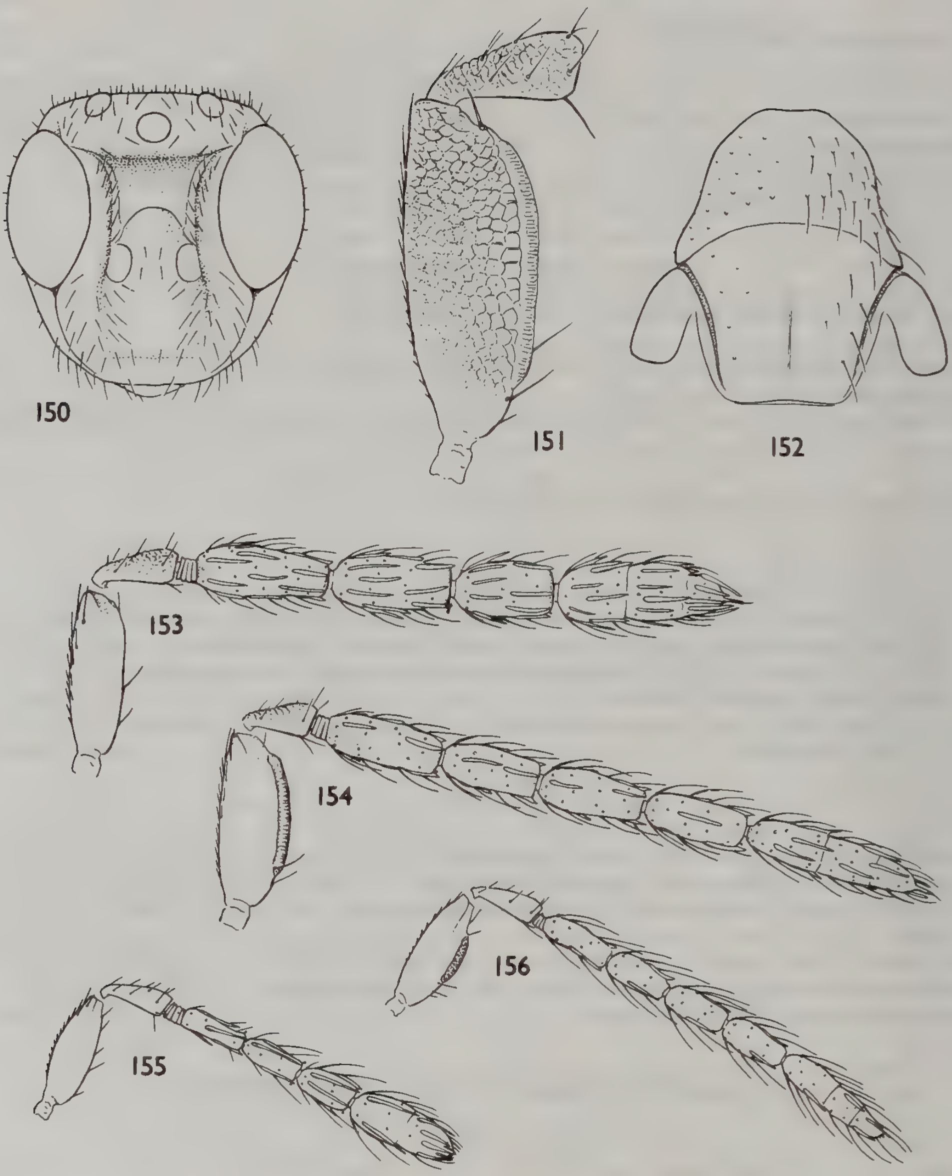
– Body without yellow markings; coxae, and femora partly, black. Antennal scape (Fig. 156) with obsolescent sculpture on its inner aspect; ventral plaque of scape about half length of scape; pedicellus with obsolescent sculpture .... ***miridivorus*** (p. 116)

Aprostocetus (Coriophagus) eurytus (Walker) **comb. rev.**

(Figs 150–154, 573, 698)

Cirrospilus Eurytus Walker, 1838*a*: 202. LECTOTYPE ♀, GREAT BRITAIN: near London (BMNH), here designated [examined].
Geniocerus elegans Erdös, 1951: 229. Holotype ♀, HUNGARY: Matra, on *Quercus cerris*, 6.viii.1947 (*Erdös*) (TM) [examined]. [Synonymized by Graham, 1961*b*: 46.]
Aprostocetus eurytus (Walker) Graham, 1961*b*: 46.
Tetrastichus eurytus (Walker) Domenichini, 1966*a*: 184; 1966*b*: 31.
Tetrastichus ledrae Viggiani, 1971: 260–269. Holotype ♀, ITALY: Sarno (IEA) [not examined]. **Syn. n.**

Earlier (Graham, 1961*b*: 46) I referred to the two Walker specimens which stand under the name *eurytus* and pointed out that the second specimen, labelled 'Cirrospil[us] Eurytus' and 'South of Fra[nce]' agreed well with the description and was probably the type from England, with a misplaced locality label. I am now convinced of this and here designate the specimen in question as lectotype.



Figs 150–156 *Aprostocetus* (*Coriophagus*) species. 150–154, *A.* (*C.*) *eurytus* (Walker): (150) ♀, head, frontal; (151) ♂, left antenna, internal aspect of scape; pedicellus; (152) ♀, pronotum and mesoscutum; (153) ♀, antenna; (154) ♂, antenna. 155, 156, *A.* (*C.*) *miridivorus* (Domenichini); (155) ♀, antenna; (156) ♂, antenna.

Tetrastichus ledrae Viggiani was described from a number of specimens of both sexes reared in Italy from eggs of *Ledra aurita* (L.). From the description I am sure that it is conspecific with *eurytus*.

♀. Head somewhat less broad than mesoscutum, about twice as broad as long; POL 2·3–2·5 OOL, OOL about equal to OD. Head in front view (Fig. 150): frons without a median longitudinal carina but with a median area which extends from toruli about half-way towards the median ocellus and is delimited dorsally by a curved impression. Vertex and occiput with very numerous short setae. Eyes 1·25–1·30 times as long as broad, separated by about their own length, with short and relatively sparse pubescence. Malar space about 0·66 length of eye, sulcus moderately curved. Mouth about equal to malar space. Antenna (Fig. 153) with scape about 0·75 length of eye, reaching about to middle of median ocellus, with characteristic sculpture over about the distal third of its inner surface (see Fig. 151) formed by slightly raised reticulation composed of nearly isodiametric areoles; pedicellus plus flagellum 1·5–1·6 times breadth of mesoscutum; pedicellus 2·0–2·5 times as long as broad, about 0·66 length of F1, its basal half with slightly raised sculpture which tends to form transverse ridges; anelli (Fig. 698); funicle proximally very distinctly stouter than pedicellus, filiform or even tapering very slightly distad, its segments decreasing gradually in length, F1 2·4–2·6 times, F2 2·2–2·3 times, F3 1·9–2·0 times as long as broad; clava about as broad as funicle, somewhat longer than F2 plus F3, 3·0–3·3 times as long as broad, bluntly pointed, with C1 not or hardly longer than broad, C2 and C3 progressively shorter, spine about 0·5 length of C3, apical seta shorter than spine; sensilla numerous, moderately long, uniseriate on claval segments but biseriate on F2 and F3, usually triseriate on F1, some subdecumbent, others with a fairly long projecting blade. Thorax about 1·7 times as long as broad; propodeal slope 30°–40°. Pronotum (Fig. 152) subconical, 0·33–0·5 as long as mesoscutum, with scattered setae except for a bare strip down the middle. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately shiny, with extremely fine engraved reticulation whose areoles are for the most part longer than broad; median line distinct over posterior half to two-thirds but absent in front; 4–6 adnotaular setae on each side and a second row of 1–4 setae mesad of the first row, all moderately long and suberect. Scutellum 1·25–1·35 times as broad as long, moderately convex; submedian lines tending to be slightly nearer to sublateral lines than to each other in the front part of the sclerite but slightly curved and converging a little posteriorly; setae equal, anterior pair in or hardly behind middle. Dorsellum nearly semicircular, 2·0–2·5 times as broad as long. Propodeum medially as long as or a little longer than dorsellum, shiny, with very weak alutaceous sculpture; median carina thin and fairly sharp, broadening in posterior third; spiracles set in rather deep foveae, moderate-sized, circular, separated by somewhat less than their diameter from metanotum; callus with 2 setae. Mesosternum in profile gently curved. Legs moderately long and slender; hind femora 3·7 times as long as broad; spurs of mid tibia 0·65 length of basitarsus, fourth tarsomere much shorter than basitarsus. Forewing about 2·1 times as long as broad; costal cell somewhat shorter than *M*, 10·5–11·5 times as long as broad; *SM* with 4–6 dorsal setae; *M* not thick, about 5 times length of *ST*, its front edge with 12–16 setae; *ST* at about 45°, very thin proximally but gradually expanding into the stigma which is longer than broad and subrectangular; *PM* a moderately long stub; speculum small, not extending below *M*; wing beyond moderately thickly pilose, quite densely towards apex; cilia less than half length of *ST*. Hindwing obtuse or rounded; cilia 0·20–0·25 breadth of wing. Gaster ovate to sublanceolate, somewhat longer than thorax, as broad as or slightly narrower than thorax, 2·0–2·6 times as long as broad; acute and slightly acuminate; last tergite about as long as broad; ovipositor sheaths projecting slightly; longest seta of each cercus 1·5–1·7 times length of next longest; tip of hypopygium slightly before half length of gaster.

Body black with strong metallic tints, more or less marked with yellow. Metallic tints vary from green with golden or brassy flecks, through green to greenish blue. Head with at least mouth-edge yellowish, more often the face and orbits more or less testaceous to yellow, in pale forms the whole head except the ocellar triangle and middle of occiput yellow. Thorax with dorsellum and upper angle of mesopleuron yellow; other yellow markings appear in the following order: a spot in each anterior angle of mid lobe of mesoscutum, another in each posterior angle, the former often extending back along the notauli and joining the posterior spot, the posterior spots sometimes united to form a transverse band; hind margin of scapulae more or less broadly, scutellum laterally and posteriorly, or entirely apart from a subtriangular spot in the middle of its front edge; prepectus and mesopleuron more or less. Antennal scape ventrally or mainly black; pedicellus black, usually testaceous beneath and at tip; flagellum brown to fuscous, sensilla pale. Coxae black with metallic tints, fore and mid coxae sometimes more or less yellow; legs otherwise yellow with tips of tarsi brownish; hind femora occasionally more or less infuscate. Tegulae yellow, sometimes with posterior edge brown. Wings hyaline, venation yellowish to testaceous, pilosity grey. Setae of body pale or whitish. Length 1·7–2·1 mm.

♂. Antenna (Fig. 154) with scape slightly shorter than eye, hardly 2·5 times as long as broad, its inner aspect (Fig. 151) with very slightly raised, isodiametric reticulation, ventral plaque very long; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus sculptured as in ♀; funicle similar to that of ♀ but tapering slightly distad and with 4 segments which are subequal or decrease very slightly in length; clava not broader than F4, subacute, with C1 and C2 each about 1·5 times as long as broad, spine about 0·5 length of C3, apical seta about half length of spine; sensilla rather sparse; flagellum clothed with pale, curved and slightly outstanding setae the length of which about equals the breadth of the segments. Genitalia (Fig. 573): aedeagus truncate, with two very short setae on each side of the truncation.

Head yellow with ocellar triangle and sometimes middle of occipital surface black. Thorax tending to have more extensive yellow markings than in ♀, with sides of pronotum, prosternum, prepectus, mesopleuron except sometimes posteriorly, often metapleuron and mesosternum, yellow; gaster with a yellow transverse band before middle and with its tip and ventral surface yellow. Antennal scape yellow with ventral plaque brown, sometimes dorsal surface infuscate; pedicellus broadly yellow distally; flagellum testaceous, usually with dark incisures between the segments. Length 1·5–1·8 mm.

MATERIAL EXAMINED

32 ♂, 26 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Hungary**, **Italy**, **Yugoslavia**.

HOST. *Ledra aurita* (L.), parasitizing the host eggs (for an account of the biology, see Viggiani, 1971).

COMMENT. I have redescribed *eurytus* in considerable detail because it has not been recognized by most authors; also because I have examined another species (♂ only) from India which is very near to it.

Aprostocetus (Coriophagus) miridivorus (Domenichini) **comb. n.**

(Figs 155, 156, 699)

Tetrastichus miridivorus Domenichini, 1967: 80–82; Kostjukov, 1978*b*: 456. Holotype ♀, ITALY: environs of Genoa, vi.1919 (*F. Invrea*) (IEA) [examined].

♀. Head (somewhat collapsed) hardly as broad as mesoscutum; POL probably about twice OOL. Eyes about 1·35 times as long as broad. Malar sulcus space 0·45–0·50 length of eye, sulcus moderately curved. Mouth very slightly greater than malar space. Setae of vertex dark, their length less than OD. Antenna (Fig. 155) with scape 0·75–0·78 length of eye, not reaching median ocellus; pedicellus plus flagellum about 1·4 times breadth of mesoscutum; pedicellus 2·5–2·7 times as long as broad, slightly to distinctly longer than F1; anelli (Fig. 699) distinct, first to third nearly laminar, fourth less than 3 times as broad as long and sometimes bearing 1–3 setae, the anelli together forming a body which is fully as long as broad; funicle proximally hardly or only just as stout as pedicellus, thickening slightly distad, its segments tending to decrease very slightly in length, F1 2·00–2·65 times, F2 1·8–2·3 times, F3 1·7–2·2 times as long as broad; clava distinctly broader than F3, from nearly as long as, to slightly longer than F2 plus F3, 2·5–2·6 times as long as broad, solid or with only C1 indistinctly marked off from C2 by a weak suture, spine extremely short, with very short apical seta; sensilla sparse, long and slender, decumbent with slightly projecting tips; some long curved setae on F2, F3 and the clava. Thorax 1·45–1·60 times as long as broad; propodeal slope about 50°. Pronotum 0·33–0·45 length of mesoscutum, nearly bare except for 6–8 setae near hind margin. Mid lobe of mesoscutum as broad as or (usually) slightly broader than long, convex, shiny, with excessively fine engraved reticulation having most areoles 3–4 times as long as broad; median line fine but usually traceable throughout; 2 adnotaular setae on each side, anterior seta about half as long as posterior seta which is nearly as long as scutellars. Scutellum about 0·75 length of mesoscutum, 1·2–1·4 times as broad as long, moderately convex, more finely sculptured than mesoscutum; submedian lines about equidistant from each other and from sublateral lines, enclosing a space 2·0–2·7 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair in middle. Dorsellum 2·2–2·7 times as broad as long, hind margin curved. Propodeum narrowly and weakly emarginate, medially slightly longer than dorsellum, shiny, with very fine, superficial reticulation; median carina low, much expanded posteriorly; spiracles very small, circular, separated by about 0·3 their diameter from metanotum; callus with 2 setae. Legs moderately long, tibiae and tarsi slender; hind femora about 3·6 times as long as broad; spur of mid tibia 0·65–0·70 length of basitarsus, fourth tarsomere almost as long as basitarsus. Forewing about 2·1 times as long as broad; costal cell shorter than *M*, 10–14 times as long as broad; *SM* with 2 (rarely 3) dorsal setae; *M* thin, 3·3–3·8 times length of *ST*, its front edge with 9–12 setae; *ST* at about 50°, rather thin proximally but expanding beyond middle to form a small subtriangular stigma; *PM* a distinct stub; speculum small, not extending below *M*; wing beyond it thickly pilose, very thickly distad, but the setae rather short; cilia 0·45–0·55 length of *ST*. Hindwing pointed to slightly acute; cilia

0·4–0·5 breadth of wing. Gaster long-ovate to lanceolate, from hardly longer than thorax to somewhat longer than head plus thorax, 2·4–2·8 (–3·3 if abnormally compressed) times as long as broad, acute and often slightly acuminate; last tergite slightly shorter than or as long as broad; ovipositor sheaths projecting at least slightly; longest seta of each cercus about 1·6 times length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body black, head and thorax with a very weak (sometimes hardly perceptible) bluish to olivaceous metallic tinge. Antennal scape testaceous with dorsal edge fuscous, or mainly fuscous; pedicellus and anelli testaceous, the former often infuscate proximally; flagellum fuscous. Coxae and proximal two-thirds to three-quarters of all femora black; legs otherwise testaceous, with tarsi darkening slightly distad. Tegulae black. Wings often slightly grey-tinged, venation testaceous to brown. Length 1·0–1·4 mm.

♂ (new). Antenna (Fig. 156) with scape 0·8 length of eye, reaching median ocellus, about 2·5 times as long as broad, with ventral plaque about 0·45 length of scape; pedicellus plus flagellum about 1·7 times breadth of mesoscutum; pedicellus 3 times as long as broad, hardly longer than F1; funicle proximally hardly stouter than pedicellus, thickening slightly distad, its segments about equal in length, each about twice as long as broad; clava not broader than F4, hardly as long as F3 plus F4, about 4 times as long as broad, 3-segmented with C1 nearly twice as long as broad; flagellum clothed with pale curved setae which are (except on C2 and C3) somewhat shorter than the segments themselves. Genitalia: aedeagus narrower than that of *eurytus*, its apex almost rounded and apparently without setae on its hind edge.

MATERIAL EXAMINED

1 ♂, 9 ♀. **France**: 1 ♀, Aveyron, La Blaquererie, 28.vii.1974; 1 ♀, Vaucluse, Mont Ventoux, Col de Perrache, 11.viii.1976, 1 ♂, 1 ♀, 22.vii.1978, 1 ♀, 31.vii.1981, 1 ♀, 18.vii.1983, 1 ♀, Combe de Veaux, near Malaucène, 5.vii.1980 (*Graham*) (BMNH). **Italy**: 1 ♀ (holotype), environs of Genoa, vi.1919, 2 ♀ (paratypes), S. Vittore Lazio, v.1929.

HOST. *Capsodes lineolatus* (Brullé) (see Domenichini, 1967).

Subgen. ***CHRYSOTETRASTICHUS*** Kostjukov

Tetrastichus subgen. *Chrysotetrastichus* Kostjukov, 1977: 190. Type-species: *Tetrastichus oreophilus* Förster, 1861, by original designation.

The characters of this subgenus are given in the key to subgenera of *Aprostocetus*: females, couplet 7 (p. 88) and males, couplet 5 (p. 89).

BIOLOGY. Species whose biology is known are egg-parasites of Coleoptera: Chrysomelidae.

COMMENTS. Characters of the three species-groups recognized are summarized in the keys to species (females and males) below.

Keys to European species of subgenus *Chrysotetrastichus*

Females

1 Propodeum broadly and deeply emarginate, medially 0·4–0·6 as long as dorsellum. Antenna (Fig. 159) with pedicellus 2·2–2·8 times as long as broad; funicle hardly stouter than the pedicellus. Forewing (Fig. 160): setae on front edge of marginal vein fully as long as the stigmal vein. Body with very weak bronze, bluish and greenish reflections. Mesosternum slightly convex. Ovipositor sheaths in one species far exserted. (*suevius*-group) 2

– Propodeum narrowly and less deeply emarginate, medially as long as or only slightly shorter than the dorsellum. Antenna with pedicellus usually at most twice as long as broad, if not then funicle distinctly stouter than the pedicellus. Forewing (Figs 161, 163) with setae on front edge of marginal vein somewhat to much shorter than the stigmal vein. Body usually with strong green to blue or bronze-green metallic tints. Mesosternum, just in front of trochantinal lobes, virtually flat. Ovipositor sheaths at most very slightly exserted 3

2 Gaster (Figs. 158) with ovipositor sheaths far exserted, slightly downcurved in profile (Fig. 157). Submarginal vein of forewing most often with 2 dorsal setae, occasionally 1 seta..... ***suevius***(p. 119)

– Ovipositor sheaths at most slightly exserted. Submarginal vein most often with 1 dorsal seta, occasionally 2 setae .... ***celtidis***(p. 123)

3 Forewing (Fig. 161) with speculum rather large, surface beyond it sparsely pilose; setae on front edge of marginal vein very short (*truncatulus*-group) .... **truncatulus** (p. 123)

– Forewing (Fig. 163) with speculum very small or nearly absent, surface beyond it thickly to densely pilose; setae on front edge of marginal vein relatively longer (*oreophilus*-group)........ 4

4 Forewing usually with 3 dorsal setae on submarginal vein, very rarely 4, rarely 2 on one wing only. Mid lobe of mesoscutum usually with 5, occasionally 4, adnotaular setae on each side. Gaster (Fig. 164) slightly longer than thorax, or as long as head plus thorax. Larger species, length 1·0–1·2 mm. Antenna (Fig. 167) with flagellum black; funicle cylindrical, distinctly stouter than the pedicellus .... **cebennicus** (p. 129)

– Forewing with 2 dorsal setae on the submarginal vein. Mid lobe of mesoscutum usually with 3, sometimes 2 or 4, adnotaular setae on each side. Gaster (Fig. 166) not longer than thorax. Species often smaller, length range 0·6–1·0 mm. Antenna sometimes with flagellum paler, or with funicle more slender 5

5 Antenna (Figs 168, 169) with funicle proximally not stouter than the pedicellus; all funicular segments quadrate; clava as long as whole funicle; flagellum testaceous. Body with weak olive or bronze metallic tinge 6

– Antenna: *either* the funicle proximally is at least slightly stouter than the pedicellus, and the flagellum is black or brown; *or* at least the second and third segments of the funicle are distinctly longer than broad *and* the clava is at least slightly shorter than the funicle. Body most often with brighter green, blue-green or bronze-green tints 7

6 Antenna (Fig. 168): second and third segments of funicle, and segments of clava, with some long curved setae which reach well beyond the tips of these segments .... **garganensis** (p. 126)

– Antenna (Fig. 169): second and third segments of funicle without long curved setae **?morairensis** (p. 127)

7 Antenna (Fig. 165): funicle stout, distinctly stouter than the pedicellus; first funicular segment quadrate or very slightly transverse, often a little shorter than the second segment; curved setae arising from near bases of second and third segments of funicle sometimes not reaching level with tips of the segments. Flagellum usually black or brown 8

– Antenna (Fig. 171): funicle proximally slender, not or only slightly stouter than the pedicellus; first segment of funicle at least slightly, the following segments distinctly, longer than broad; curved setae arising from near bases of second and third segments of funicle reaching somewhat beyond the tips of these segments. Flagellum often testaceous 9

8 Antenna (Fig. 165): sensilla having their blades mostly as long as or longer than their bases; setae arising from near bases of second and third segments of funicle not quite or only just reaching level with the tips of these segments; first funicular segment usually slightly shorter than the second; flagellum very stout, about 1·5 times as stout as the pedicellus in dorsal view **distichus** (p. 125)

– Antenna: sensilla having their blades mostly shorter than their bases; setae arising from near bases of second and third segments of funicle reaching slightly beyond the tips of these segments; first funicular segment hardly shorter than the second; flagellum less stout **oreophilus** (p. 124)

9 Antenna: clava 2·8–3·0 times as long as broad, with its first and second segments hardly longer than broad; flagellum fuscous. Head slightly broader than the mesoscutum **?masculinus** (p. 128)

– Antenna (Fig. 171): clava 3·3–3·5 times as long as broad, with its first and second segments slightly longer than broad; flagellum testaceous. Head ? not broader than the mesoscutum **?setulosus** (p. 127)

Males

1 Antenna (Fig. 170): segments of funicle with compact subbasal whorls of very long dark setae; first segment of clava with two partial whorls of similar setae; pedicellus 2·0–2·5 times as long as broad. Forewing beyond the very small speculum rather densely pilose; setae on front edge of marginal vein fully as long as stigmal vein. Mesosternum slightly convex. Body black with at most very weak bronze, bluish, or greenish tinge. (*suevius*-group) 2

— Antenna: segments of funicle and clava without compact whorls of long dark setae except in *truncatulus*, which has the pedicellus less than twice as long as broad, forewing beyond the speculum rather sparsely pilose, setae on front edge of marginal vein much shorter than the stigmal vein, mesosternum virtually flat, body with strong blue to green metallic tints 3

2 Antenna (Fig. 170) with pedicellus about 2·5 times as long as broad; ventral plaque of scape about 0·35 length of scape and placed about in the middle: first funicular segment not longer than broad. Submarginal vein usually with 1 dorsal seta, rarely 2 setae .... ***celtidis*** (p. 123)

— Antenna with pedicellus about twice as long as broad; ventral plaque of scape about 0·25 length of scape and placed slightly above the middle; first funicular segment slightly longer than broad. Submarginal vein with 2 dorsal setae .... ?***suevius*** (p. 119)

3 Antenna (Fig. 172): segments of funicle with compact subbasal whorls of long dark setae; first segment of clava with 2 partial whorls of similar setae. Forewing with surface beyond the moderate-sized speculum rather sparsely pilose; setae on front edge of marginal vein much shorter than the stigmal vein (*truncatulus*-group) .... ***truncatulus*** (p. 123)

— Antenna: segments of funicle and clava without compact subbasal whorls of long dark setae (sometimes with loose whorls of moderately long pale setae, Figs 177–179). Forewing with surface beyond the small or very small speculum relatively more densely pilose; setae on front edge of marginal vein relatively longer (*oreophilus*-group) 4

4 Antenna (Fig. 173) with scape swollen, yellowish, its ventral plaque extending nearly its whole length; flagellum very slender; first funicular segment 1·6–1·8 times as long as broad, the following segments about twice as long as broad; clava 4 times as long as broad or slightly more .... ***masculinus*** (p. 128)

— Antennal scape with shorter ventral plaque which extends at most slightly more than half its length, the scape usually less expanded, sometimes dark; funicular segments often relatively shorter; clava usually less elongate 5

5 Antenna (Figs 174–176): funicular segments with short setae. Submarginal vein usually with 2, sometimes 3, dorsal setae 6

— Antenna (Figs 177–179): funicular segments with some long setae. Submarginal vein with 2 dorsal setae 8

6 Submarginal vein usually with 3 dorsal setae, rarely 2. Antenna (Fig. 174) with scape dark, its ventral plaque about 0·5 length of scape; first funicular segment hardly shorter than the second .... ***cebennicus*** (p. 129)

— Submarginal vein normally with 2 dorsal setae. Antenna with scape (apart from its ventral plaque) often pale; first funicular segment sometimes distinctly shorter than the second segment 7

7 Antenna (Fig. 175) with sensilla of flagellum sparse and having relatively shorter blades ***morairensis*** (p. 127)

— Antenna (Fig. 176) with sensilla of flagellum numerous, and having outstanding blades which are as long as their bases .... ***distichus*** (p. 125)

8 Antenna (Fig. 177) with first funicular segment 1·6–1·8 times as long as broad; clava nearly 4 times as long as broad, with its first and second segments about 1·5 times as long as broad ***setulosus*** (p. 127)

— Antenna (Figs 178, 179) with first funicular segment quadrate or only slightly longer than broad; clava 2·60–3·75 times as long as broad, its first segment not or hardly longer than broad, second quadrate to somewhat longer than broad.. 9

9 Length 0·7–0·9 mm. Forewing, beyond the speculum, relatively densely pilose; marginal vein 2·0–2·5 times length of stigmal vein. Antenna (Fig. 178) with ventral plaque of scape 0·42–0·55 length of scape. Gaster black .... ***oreophilus*** (p. 124)

— Length 0·4–0·6 mm. Forewing, beyond the speculum, less densely pilose. *Either* marginal vein of forewing 2·65–3·20 times length of stigmal vein; *or* ventral plaque of scape about 0·25 length of scape. Gaster sometimes more or less testaceous at base 10

10 Marginal vein about 2·5 times length of stigmal vein. Antenna with ventral plaque of scape (Fig. 179) about 0·25 length of scape .... ***garganensis*** (p. 126)

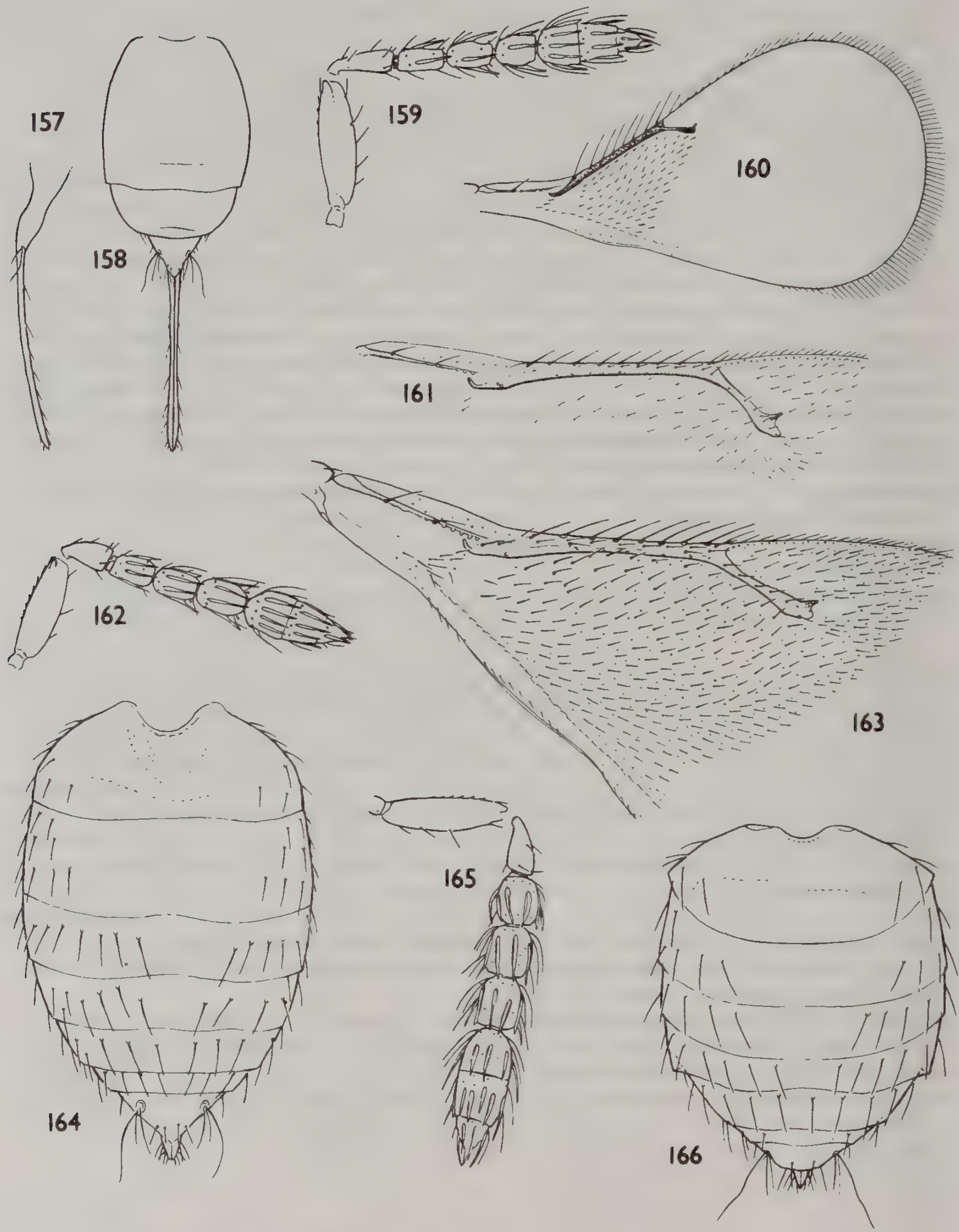
— Marginal vein 2·65–3·20 times length of stigmal vein. Antenna with ventral plaque of scape 0·35–0·47 length of scape .... ***A. (C.)* sp.**

The *suevius*-group

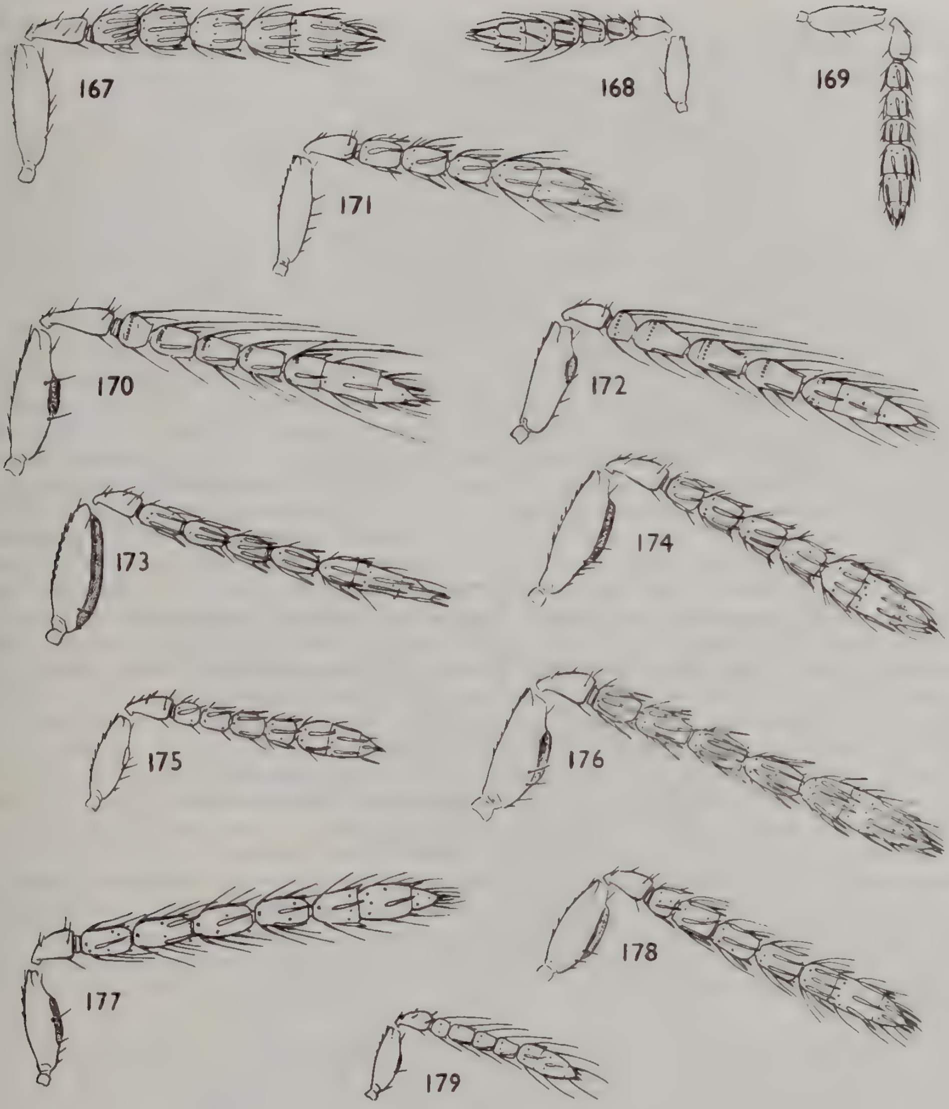
Aprostocetus (Chrysotetrastichus) suevius (Walker) comb. rev.

(Figs 157–160)

Cirrospilus Suevius Walker, 1839*a*: 323. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*a*: 44) [examined].



Figs 157–166 *Aprostocetus* (*Chrysotetrastichus*) species. 157–160, *A.* (*C.*) *suevius* (Walker) ♀: (157) gaster, distal, profile; (158) gaster, dorsal; (159) antenna; (160) forewing (pilosity of distal part omitted). 161, 162, *A.* (*C.*) *truncatulus* sp. n.: (161) ♀, forewing, anterior; (162) ♀, antenna. 163, *A.* (*C.*) *distichus* Graham ♀, forewing. 164, *A.*(*C.*) *cebennicus* sp. n. ♀, gaster. 165, 166, *A.* (*O.*) *distichus* Graham ♀; (165) forewing; (166) gaster.



Figs 167–179 *Aprostocetus* (*Chrysotetrastichus*) species, right antennae (except Fig. 168 which represents a left antenna). 167, *A.* (*C.*) *cebennicus* sp. n. ♀. 168, *A.* (*C.*) *garganensis* sp. n. ♀. 169, *A.* (*C.*) ? *morairensis* sp. n. ♀. 170, *A.* (*C.*) *celtidis* (Erdös) ♂. 171, *A.* (*C.*) ? *setulosus* sp. n. ♀. 172, *A.* (*C.*) *truncatulus* sp. n. ♂. 173, *A.* (*C.*) *masculinus* sp. n. ♂. 174, *A.* (*C.*) *cebennicus* sp. n. ♂. 175, *A.* (*C.*) *morairensis* sp. n. ♂. 176, *A.* (*C.*) *distichus* Graham ♂. 177, *A.* (*C.*) *setulosus* sp. n. ♂. 178, *A.* (*C.*) *oreophilus* (Förster) ♂. 179, *A.* (*C.*) *garganensis* sp. n. ♂.

Aprostocetus suevius (Walker) Kurdjumov, 1913: 252; Graham, 1961*a*: 44.

Aprostocetus salicis Erdös, 1961: 488. Holotype ♀, HUNGARY: Bátorliget, 2.vii.1959, on *Salix cinerea* (TM) [examined]. [Synonymized by Domenichini (1966*a*: 108).]

Tetrastichus suevius (Walker) Domenichini, 1964: 37; 1966*a*: 108; 1966*b*: 50; Kostjukov, 1978*b*: 454; Graham, 1985*b*: 1068.

♀. Head slightly less broad than mesoscutum, about 2·5 times as broad as long; temples virtually nil; POL 1·8–2·0 OOL, OOL hardly 1·5 OD. Eyes about 1·3 times as long as broad, rather thickly clothed with very short setae, separated by about 1·25 times their length. Malar space about 0·6 length of eye, sulcus nearly straight. Mouth about 1·2 malar space. Head shiny, with excessively fine, delicately engraved reticulation. Antenna (Fig. 159) with scape slightly shorter than eye, reaching median ocellus, its ventral edge with rather long setae; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·2–2·8 times as long as broad, distinctly longer than F1; funicle very slightly stouter than pedicellus, filiform, its segments subequal or decreasing very slightly in length, F1 1·6–1·9 times, F2 1·4–1·8 times, F3 1·3–1·6 times as long as broad; clava slightly broader than F3, 3·1–3·3 times as long as broad, longer than F2 plus F3, in small specimens as long as the whole funicle, acute, with C1 and C2 not or hardly longer than broad, spine slender and about 0·33 length of C3, its apical seta slightly shorter than the spine; sensilla long and slender, some decumbent, others with a somewhat outstanding blade. Thorax about 1·2 times as long as broad, slightly broader than high; propodeal slope about 70°. Pronotum very short, crescentic. Mid lobe of mesoscutum about as broad as long, convex, shiny, with excessively fine and delicately engraved, almost obsolescent, reticulation, whose areoles are mostly 3–4 times as long as broad; median line distinct, though fine; 2–3 moderately strong adnotaular setae on each side, increasing in length caudad, hindmost as long as scutellar setae. Scutellum distinctly shorter than mesoscutum, 1·2–1·3 times as broad as long, strongly convex, sculptured like mesoscutum; submedian lines hardly farther from each other than from sublateral lines, enclosing a space 2·0–2·5 times as long as broad; setae subequal in length, this slightly less than distance between submedian lines, anterior pair in or slightly behind middle. Dorsellum convex, about twice as broad as long, shiny and nearly smooth. Propodeum rather broadly and deeply emarginate, 0·4–0·6 as long as dorsellum, shiny and virtually smooth; median carina very short; spiracles very small, subcircular, close to metanotum; callus with 2–3 setae. Entire pleuron very shiny, almost smooth. Legs moderately long, rather slender; hind coxae slightly more than twice as long as broad, very shiny and almost smooth; hind femora about 4·5 times as long as broad; spur of mid tibia about 0·8 length of basitarsus, fourth segment of mid and hind tarsi as long as basitarsus. Forewing as Fig. 160, 1·9–2·0 times as long as broad, strongly expanded, rounded at apex; costal cell 13–15 times as long as broad, its lower surface with a row of setae; *SM* most often with 2 dorsal setae, sometimes 1 seta; *M* only a little longer than costal cell, 2·9–3·4 times length of *ST*, its front edge with 6–9 setae which are fully as long as *ST*; *ST* thin, only very slightly expanded distally, its tip tending to be pointed, uncus long; *PM* absent; speculum very small, closed below; wing beyond it densely clothed with short setae; cilia somewhat shorter than or as long as *ST*. Hindwing strongly acute, cilia 0·75 to 1·00 breadth of wing. Gaster (Figs 157, 158) ovate, tending to be broad at the base, with sides subparallel and converging only in the posterior part, slightly longer than thorax, usually narrower than but sometimes as broad as thorax, 1·6–2·3 times as long as broad; last tergite slightly shorter than its basal breadth; exserted part of ovipositor sheaths 0·6–1·3 length of hind tibia, slightly curved downwards (Fig. 157); longest seta of each cercus nearly twice the length of the next longest and kinked about the middle of its length; tip of hypopygium slightly beyond half length of gaster.

Body black with very weak bronze, bluish or greenish metallic tinge. Antennal scape black or brown, sometimes testaceous beneath, or testaceous with dark dorsal edge; pedicellus and flagellum dull testaceous to brown, pedicellus often infuscate dorsally. Coxae black; trochanters testaceous to brown; femora fuscous to black, tips of fore and mid femora broadly, tips of hind femora narrowly, testaceous; tibiae testaceous; tarsi testaceous, their tips brownish. Tegulae black. Wings subhyaline; venation testaceous to brown, *ST* subhyaline proximally. Length of body 0·6–1·1 mm., of body plus ovipositor 0·8–1·6 mm.

♂. Unknown. If the male exists, it may be very like that of *celtidis*.

MATERIAL EXAMINED

17 ♀. **Czechoslovakia, Great Britain, Hungary, Ireland**.

HOST. Unknown.

Aprostocetus (Chrysotetrastichus) celtidis (Erdös) **comb. rev.**

(Figs 170, 577, 672, 701)

? *Pteromalus ooctonus* Kawall, 1858: 67. Syntypes ? ♂, GERMANY (not located).

Geniocerus celtidis Erdös, 1954: 356. Lectotype ♀, HUNGARY: Tompa, 1.x.1952 (TM), designated by Graham (1985: 1069) [examined].

Aprostocetus celtidis (Erdös) Graham, 1961*b*: 44.

Tetrastichus celtidis (Erdös) Domenichini, 1964: 37; 1966*b*: 23; Kostjukov, 1978*b*: 454; Graham, 1985*b*: 1069.

♀. Differs from that of *suevius* only in the characters given in the key to females (couplet 2). Anelli (Fig. 701). Hypopygium (Fig. 672).

♂. Antenna (Fig. 170) with scape about 0·85 length of eye, 2·6–2·8 times as long as broad, with ventral plaque 0·30–0·35 length of scape; pedicellus plus flagellum 1·35 times breadth of mesoscutum; pedicellus 2·55–2·75 times as long as broad, about as long as F1 plus F2; funicle slightly stouter than pedicellus, almost filiform; F1 somewhat shorter than F2 and slightly transverse or quadrate, following segments subequal in length, each 1·2–1·5 times as long as broad; clava slightly broader than F4, 4·0–4·5 times as long as broad, with C1 quadrate and somewhat shorter than C2 which is 1·3–1·8 times as long as broad, C3 shorter than C2; whorled setae long, those of F1 reaching about to tip of F4. Forewing: *M* with 1 dorsal seta. Gaster oblong, slightly shorter and much narrower than thorax, with ventral plica. Genitalia (Fig. 577).

Colour as in ♀ of *suevius* but femora tending to be less extensively darkened, sometimes infuscate at base only, in pale specimens wholly testaceous. Northern specimens thought to belong to *celtidis* have the gaster usually wholly black, sometimes with a rather indistinct testaceous subbasal spot. Males from southern France have a large translucent yellow subbasal spot which leaves only the extreme base dark, or even covers as much as the basal third of the gaster.

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **Great Britain**, **Hungary**, **Ireland**, **Italy**.

HOST. *Pyrrhalta luteola* (Müller): **France**: Vaucluse, Lafare (*F. Herard*) (European Parasite Laboratory).

The *truncatulus*-group

Aprostocetus (Chrysotetrastichus) truncatulus **sp. n.**

(Figs 161, 162, 172)

♀. Head slightly collapsed but slightly broader than mesoscutum, probably about 2·5 times as broad as long; temples virtually nil; POL probably somewhat more than twice OOL and the latter not more than 1·5 times OD. Eyes about 1·4 times as long as broad, probably separated by about their own length, with very short, rather sparse pubescence. Malar sulcus 0·55 length of eye, sulcus nearly straight. Head moderately shiny, with extremely fine engraved reticulation; setae short and fine, those of vertex distinctly shorter than OD. Antenna (Fig. 162) with scape 0·7 length of eye, about 3 times as long as broad, not nearly reaching median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus about 1·6 times as long as broad, hardly or very slightly longer than F1; funicle proximally as stout as or slightly stouter than pedicellus, thickening very slightly distad, its segments subequal or increasing very slightly in length, F1 1·0–1·2 times, F2 and F3 1·2–1·4 times, as long as broad; clava considerably broader than F3, slightly to distinctly longer than F2 plus F3, 2·5–2·6 times as long as broad, acute, with C1 and C2 subequal in length and quadrate, C3 shorter, spine short, its apical seta about as long as the spine; sensilla moderately numerous, uniseriate, moderately long, rather slender; F2, F3 and segments of clava with a whorl of pale curved setae which arise from near the base of the segments and are about equal in length to them; seta on F1, and some on F2, short. Thorax about 1·3 times as long as broad; propodeal slope about 75°. Pronotum extremely short, with a row of rather short setae near hind margin, and a few others in front of them. Mid lobe of mesoscutum slightly broader than long, moderately convex, shiny, with excessively fine and delicately engraved reticulation, with most areoles at least 4 times as long as broad; median line fine but distinct; 4–5 rather short adnotaular setae on each side (but the hindmost as long as scutellar setae). Scutellum about 0·66 length of mesoscutum, about 1·3 times as broad as long, moderately strongly convex, sculptured like mesoscutum; submedian lines about equidistant from each other and from sublateral lines, enclosing a space about 2·5 times as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair in middle. Dorsellum oval, hardly more than twice as broad as long. Propodeum narrowly and not deeply emarginate, medially almost as long as dorsellum, shiny, with obsolescent sculpture; median carina thin and rather weak, expanded only slightly posteriorly; spiracles very small, nearly circular, almost touching metanotum; callus with 2 setae, one outside spiracle and the other nearer hind corner of propodeum. Meso- and metapleura shiny and nearly smooth. Precoxal suture fine but distinct over posterior 0·3–0·4 length of mesosternum. Legs rather short, of medium thickness; hind coxae nearly vertical, shiny, with only traces of sculpture, hind edge curved; hind femora about 3·7 times as long as broad; spur of mid tibia about 0·75 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing (Fig. 161) hardly 1·9 times as long as broad, reaching well beyond tip of gaster, its apical margin slightly oblique; costal cell slightly shorter than *M*, 8–9 times as long as broad, its lower surface with a row of setae; *SM* with 2 dorsal setae; *M* rather thick, 2·25–2·40 times length of *ST*, its tip in or hardly beyond middle of wing, its front edge with 9–10 rather short setae; *ST* at about 50°, rather thin proximally but expanding from middle to form a moderate-sized, slightly bifurcate stigma; *PM* absent; speculum rather small, but extended as a bare wedge about half-way along length of *M*; there is also a bare area above *ST*; wing just beyond speculum rather sparsely clothed with short fine setae, but distinctly more thickly pilose distad; cilia of apical margin 0·15–0·17 length of *ST*. Hind wing slightly pointed or subacute; cilia 0·3–0·4 breadth of wing. Gaster ovate, flattened and much broader than high, from nearly as long to somewhat longer than thorax, nearly as broad as thorax, 1·25–1·50 times as long as broad, its apex forming a slightly obtuse or right angle; last tergite very small, fully twice as broad as long; ovipositor sheaths projecting very slightly; longest seta of each cercus about 1·5 times length of next longest, slightly kinked; tip of hypopygium at about half length of gaster; other setae of gaster about as long as scutellar setae.

Body bluish green; gaster in one specimen with a transverse testaceous band along hind margin of basal tergite and extending back on to middle of following tergite. Antennal scape yellow; pedicellus fuscous, paler beneath and at tip; flagellum brown to fuscous. Coxae coloured like body; legs otherwise yellow with mid and hind femora sometimes brownish proximally, fourth tarsomere of all legs brown, fore tarsus sometimes more extensively brownish. Tegulae black with metallic tint. Wings hyaline with pilosity tending to be pale, sometimes inconspicuous; venation brown, *ST* paler in its middle. Length 0·8–1·1 mm.

♂. Antenna (Fig. 172) with scape 0·8 length of eye, about 2·8 times as long as broad, with ventral plaque 0·22 length of scape; pedicellus plus flagellum 1·3 times breadth of mesoscutum; pedicellus 1·8 times as long as broad, much longer than F1; funicle filiform, slightly stouter than pedicellus; F1 about half as long as F2, quadrate, following segments equal in length, nearly twice as long as broad; clava hardly broader than F4, about 4 times as long as broad, slightly longer than F3 plus F4, acute, with C1 quadrate, C2 slightly longer and 1·3 times as long as broad, C3 slightly shorter; whorled setae long, those of F1 reaching about to tip of F3. Gaster oblong-elliptic, slightly shorter and much narrower than thorax; apparently without ventral plica.

Colour as in ♀, but ventral plaque of scape brown, pedicellus and flagellum fuscous; mid and hind femora with proximal half black.

MATERIAL EXAMINED

1 ♂, 3 ♀. Holotype ♀, **France**: Var, Bois de Pourrières, 24.vii.1979 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, Vaucluse, Brantes, 19.vii.1974, 1 ♀, Bédoin, 16.viii.1976, 1♂, 1.vii.1980 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. I have examined a male from Zimbabwe: Salisbury (*A. Watsham*) which is very near that of *truncatulus* but differs in some features; it probably represents an undescribed species.

The *oreophilus*-group

Aprostocetus (Chrysotetrastichus) oreophilus (Förster) comb. n.

(Figs 178, 576, 700)

Tetrastichus oreophilus Förster, 1861: 38; Domenichini, 1964: 34, 36, 37, ? fig. 5; 1966*a*: 108; 1966*b*: 42 (excluding synonym). Lectotype ♂, SWITZERLAND: Rosegthal (NM), designated by Domenichini (1964: 34) [examined].

Geniocerus oreophilus (Förster) Kurdjumov, 1913: 250; ? Erdös, 1954: 359.

♂. Antenna (Fig. 178) with scape 0·85 length of eye, reaching middle of median ocellus, 2·3–2·6 times as long as broad, with ventral plaque 0·42–0·55 length of scape; pedicellus plus flagellum about 1·35 times breadth of mesoscutum; pedicellus 1·6–1·8 times as long as broad, distinctly longer than F1; funicle filiform, hardly stouter than pedicellus; F1 shorter than F2, quadrate or very slightly transverse, following segments subequal in length, 1·6–1·8 times as long as broad; clava slightly broader than F4, 2·60–3·75 times as long as broad, nearly as long as F2 plus F3 plus F4, with C1 not or hardly longer than broad, C2 1·5–1·6 times as long as broad, C3 shorter; sensilla moderately numerous, long and slender, with long decumbent bases and short projecting blades; F2, F3, F4 and claval segments each with a subbasal whorl of curved setae which reach to or slightly beyond the tip of the segment. Forewing: *SM* with 2 dorsal setae; *M* 2·0–2·5 times length of *ST*; wing beyond speculum relatively densely pilose. Gaster as in ♂ *distichus*. Genitalia (Fig. 576).

Antenna with scape testaceous, ventral plaque darker; flagellum testaceous. Body, legs and wings coloured much as in ♀ *distichus*. Length 0·7–0·9 mm.

♀. The ♀ which I associate with ♂ *oreophilus* differs from that of *distichus* only in the characters mentioned in the key to females (couplet 8). Anelli (Fig. 700).

MATERIAL EXAMINED

6 ♂, 1 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Italy**, **Switzerland**, **Yugoslavia**.

HOST. *Cryptocephalus pini* (L.), according to Domenichini (1964: 37; 1966*b*: 42), attacking the eggs.

COMMENTS. Domenichini (1964: 36) stated that he had found considerable variation in the proportions of F1 in the ♂ antenna (illustrated in his figs 5 and 6) and in the relative length of the metanotum. His figure 5 corresponds to the structure of the antenna in the ♂ lectotype of *oreophilus*. His figure 6 certainly represents the antenna of another species, however; whilst the variation of the metanotum noted by him also suggests that two species were involved.

Aprostocetus (Chrysotetrastichus) distichus (Graham)

(Figs 55, 165, 176)

Aprostocetus distichus Graham, 1961*b*: 20. Holotype ♀, GREAT BRITAIN: Oxfordshire, Bald Hill, near Lewknor, 2.vi.1957 (UM) [examined].

This species was synonymized with *Tetrastichus oreophilus* Förster by Domenichini (1966*b*: 42) but if I have correctly associated the sexes of *distichus*, then it is distinct.

♀. The original description (Graham, 1961*b*: 20–2.) should be modified as follows. Head very slightly broader than mesoscutum; POL 1·60–1·85 OOL; OOL about twice OD. Eyes about 1·4 times as long as broad, separated by slightly more than their length, with short but moderately thick pubescence. Malar space about 0·6 length of eye, sulcus nearly straight. Mouth about 1·3 times malar space. Setae of vertex shorter than OD. Antenna (Fig. 165) with scape about 0·75 length of an eye, not reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, slightly longer than F1; funicle filiform, about 1·5 times as broad as pediellus; F1 quadrate or very slightly transverse, usually a little shorter than F2 though sometimes equal to it in length, F2 1·25–1·35 times, F3 1·20–1·45 times as long as broad; clava hardly broader than F3, 2·7–3·0 times as long as broad, distinctly longer than F2 plus F3, bluntly pointed, with C1 as long as broad, C2 about as long as C1, C3 much shorter, spine about 0·25 length of C3, its apical seta about as long as the spine; sensilla in one irregular row on each segment, moderately slender, mostly about 0·7 length of the segments, decumbent with a short blade, a few as long as the segment which bears them and with a long decumbent base and a slightly longer outstanding blade; F1 with short setae in basal part, some longer and slightly curved in distal part, F2 and F3 with some long curved setae near their bases and reaching nearly or just to their tips. Thorax 1·30–1·35 times as long as broad; propodeal slope 60°–70°. Pronotum very short, transversely lunate, with a row of rather short setae near hind margin. Mid lobe or mesoscutum slightly broader than long, moderately shiny, with excessively fine and delicate superficial reticulation composed of areoles mostly 3–5 times as long as broad; median line sometimes extremely fine and weak though visible in some lights, occasionally absent; 2–4 fine adnotaular setae on each side, the hindmost slightly shorter than scutellar setae. Scutellum about 0·75 length of mesoscutum, about 1·2 times as broad as long, moderately convex, sculptured like mesoscutum, submedian lines hardly nearer to sublateral lines than to each other, enclosing a space 2·0–2·7 times as long as broad; anterior setae slightly shorter than posterior setae, placed in or slightly behind the middle, posteriors nearly as long as distance between submedian lines. Dorsellum about 2·5 times as broad as long, transversely oval with hind margin curved, shiny. Propodeum similar to that of *cebennicus* (Fig. 55), narrowly but moderately deeply emarginate, medially as long as or slightly longer than dorsellum, shiny, with fine superficial or hardly engraved reticulation; median carina hardly raised, smooth, thin anteriorly but broadening caudad; spiracles very small, subcircular, touching metanotum; callus with 2 setae, one outside the spiracle, the other nearer hind corner of propodeum. Legs of medium length, rather slender; hind coxae nearly vertical, about 2·5 times as long as broad, shiny and nearly smooth, with hind edge slightly curved; hind femora about 4 times as long as broad; spur of mid tibia nearly as long as basitarsus, fourth tarsomere almost as long as basitarsus. Forewing (Fig. 163) 1·9–2·0 times as long as broad, reaching well beyond tip of gaster; costal cell slightly shorter than *M*, 11·5–12·5 times as long as broad, lower surface with a row of setae; *SM* with 2 dorsal setae; *M* not thick, 1·7–2·7 time length of *ST*, its front edge with 7–9 setae; *ST* at 45°–50°, very thin proximally, very slightly expanded beyond half its length to form a narrow oblong stigma having a moderately long uncus; speculum very small or nearly absent, not extending below *M*, closed below; wing beyond it thickly pilose, especially thickly distad, the setae short; cilia 0·25–0·50 length of *ST*. Hindwing acute; cilia 0·4–0·6 breadth of wing. Gaster (Fig. 166) ovate, usually about as long as thorax, occasionally somewhat longer, about as broad as thorax, 1·0–1·3 times as long as broad, obtuse or right-angled at apex, occasionally slightly acute; last tergite very short, tending to be trapeziform, 2·0–3·3 times as broad as long; ovipositor sheaths projecting very slightly; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body black with strong metallic tints which vary from greenish blue through green to bronze-green (occasionally coppery in places). Antenna black, or flagellum brown, the scape and pedicellus occasionally paler beneath. Coxae, and femora except their tips, coloured like body; trochanters mainly yellow to mainly fuscous; tips of femora (of fore femora broadly) and tibiae, yellowish to testaceous, the mid and hind tibiae in British specimens sometimes mainly brownish; tarsi brown to fuscous, mid and hind ones sometimes paler at base. Tegulae dark. Wings hyaline or slightly greyish, venation testaceous to fuscous. Length 0·7–1·0 mm.

♂. Antenna (Fig. 176) with scape about 0·85 length of eye, reaching middle of median ocellus, 2·3–2·4 times as long as broad, with ventral plaque about 0·48 length of scape; pedicellus plus flagellum about 1·6 times breadth of mesoscutum; pedicellus about 2·2 times as long as broad, slightly longer than F1; funicle filiform, slightly stouter than pedicellus; F1 slightly shorter than F2, 1·4–1·6 times as long as broad, following segments subequal in length, each 1·8–2·0 times as long as broad; clava slightly broader than F4, about 4 times as long as broad, with C1 hardly longer than broad, C2 longer and about 1·6 times as long as broad, C3 shorter; sensilla numerous, long, with long decumbent bases and about equally long projecting blades; flagellum with setae short. Gaster oblong, slightly shorter and distinctly narrower than thorax, with ventral plica.

MATERIAL EXAMINED

2 ♂, 10 ♀. **Czechoslovakia, France, Great Britain.**

HOST. Unknown.

Aprostocetus (Chrysotetrastichus) garganensis sp. n.

(Figs 168, 179)

♀. Antenna (Fig. 168) with pedicellus about 1·8 times as long as broad, slightly shorter than F1 plus F2; funicle proximally hardly as stout as pedicellus, thickening somewhat, its segments subequal in length, quadrate; clava distinctly broader than F3, about 2·6 times as long as broad, as long as the whole funicle; C1 and C2 equal in length, quadrate, C3 slightly shorter; sensilla not very numerous, slender, decumbent with hardly projecting very short blades; F2, F3 and the claval segments with some very long curved setae which are considerably longer than the segments themselves. Mid lobe of mesoscutum with 2–3 adnotaular setae on each side. Forewing: *SM* with 2 dorsal setae; *M* 2·5–2·8 times length of *ST*, its front edge with 6–7 setae; wing beyond speculum rather less thickly pilose than in *distichus*; cilia of apical margin nearly as long as *ST*. Gaster subcircular, obtuse, much shorter and slightly narrower than thorax.

Body black with weak bluish tinge; gaster basally somewhat paler, or obscurely testaceous. Antennal scape testaceous, slightly darker at tip; pedicellus fuscous with paler tip; flagellum brown. Legs coloured as in the paler forms of *distichus*. Length 0·48–0·52 mm.

♂. Antenna (Fig. 179) with scape slightly shorter than an eye, about 2·5 times as long as broad, with ventral plaque about 0·25 length of scape; pedicellus plus flagellum 1·1–1·2 times breadth of mesoscutum; pedicellus 1·75–1·85 times as long as broad, slightly shorter than F1 plus F2; funicle filiform, more slender than pedicellus, with F1 shorter than F2 and quadrate, following segments subequal in length, each 1·60–1·75 times as long as broad; clava much broader than funicle, 2·6–2·8 times as long as broad, nearly as long as F2 plus F3 plus F4, with C1 not longer than broad, C2 somewhat longer than C1 and about 1·5 times as long as broad, C3 very short; sensilla sparse, slender, decumbent with short projecting blades; each segment of the funicle with a loose whorl of a few long pale setae, those of F1 reaching beyond tip of F2, the others comparable in length, claval segments with loose whorls of similar setae. Forewing with *M* about 2·5 times length of *ST*; wing beyond speculum rather sparsely pilose. Gaster subcircular to shortly oval, not or only slightly longer than broad, much shorter and narrower than thorax.

Body colour as in ♀. Antennal scape yellowish with brown plaque; pedicellus and flagellum brownish testaceous. Femora brownish over about proximal half. Length 0·40–0·45 mm.

MATERIAL EXAMINED

4 ♂, 2 ♀. Holotype ♀, **Italy**: Monte Gargano, 10 km south of Vieste, 6.ix.197 (*Bouček*) (BMNH).

Paratypes. **Greece**: 3 ♂, Peloponnisos, Petalidion, 27.viii.1979 (*Bouček*) (BMNH). **Italy**: 1 ♀, same data as holotype (BMNH). **Sardinia**: 1 ♂, Villasimius, vi.1975 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Chrysotetrastichus) morairensis sp. n.

(Figs 169, 175)

♂. Antenna (Fig. 175) with scape 0·85 length of eye, about 2·7 times as long as broad, with ventral plaque short, about 0·25 length of scape; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus 1·9 times as long as broad, nearly as long as F1 plus F2; funicle proximally hardly as stout as pedicellus, thickening very slightly distad, F1 slightly shorter than F2 and subquadrate, following segments subequal in length, F2 and F3 each about 1·5 times as long as broad, F4 nearly quadrate; clava somewhat broader than F4, nearly as long as F2 plus F3 plus F4, about 3·6 times as long as broad, with C1 and C2 quadrate, C3 shorter than C2; sensilla rather sparse, long and slender, most with moderately long decumbent bases and shorter blades; setae of flagellum short and nearly straight. Mid lobe of mesoscutum with 3 adnotaular setae on right side, 4 on left. Forewing: *SM* with 2 dorsal setae; *M* 2·2 times length of *ST*; cilia of apical margin about 0·6 length of *ST*. Other features as in *distichus* and *oreophilus*. Length 0·65 mm.

The possible ♀ of *morairensis* has the following characters. Antenna (Fig. 169) with pedicellus about 1·8 times as long as broad, much longer than F1 but slightly shorter than F1 plus F2; funicle proximally hardly as stout as pedicellus, thickening slightly distad, its segments subequal in length, quadrate; clava slightly broader than F3, as long as the whole funicle, about 2·5 times as long as broad, with C1 and C2 quadrate, C3 shorter; sensilla not very numerous, moderately slender and long, decumbent with very slightly projecting blades; setae of funicle relatively short, some of those on the clava as long as the segments themselves. Mid lobe of mesoscutum with 3 adnotaular setae on each side, nearly equal in length. Forewing reaching far beyond tip of gaster; *SM* with 2 dorsal setae; *M* about 3 times length of *ST*; speculum very small, but extended as a very narrow bare strip to *ST*; wing beyond not very thickly pilose; cilia of apical margin about 0·5 length of *ST*. Gaster with longest seta of each cercus only slightly longer than the next longest, curved but not kinked. Length 0·6 mm. Other features as in *distichus*.

MATERIAL EXAMINED

1 ♂, 1 ♀. Holotype ♂, **Spain**: Barcelona, Calella de la Costa, vi.1971 (*Bouček*) (BMNH).

Non-paratypic material. **Spain**: 1 ♀, Alicante, Moraira, 17.vi.1973 (*Bouček*) (BMNH).

HOSTS. Unknown.

Aprostocetus (Chrysotetrastichus) setosulus sp. n.

(Figs 171, 177)

[? *Tetrastichus oreophilus* Förster; Domenichini, 1964: 34, in part, fig. 6. Misidentification.]

♂. Antenna (Fig. 177) with scape about 2·8 times as long as broad, reaching median ocellus, with ventral plaque 0·48 length of scape; pedicellus plus flagellum about 1·63 breadth of mesoscutum; pedicellus 1·75 times as long as broad, about as long as F1; funcile filiform, hardly stouter than pedicellus; F1 slightly shorter than F2 and 1·6–1·8 times as long as broad, following segments subequal in length, each about twice as long as broad; clava slightly broader than F4, about 4 times as long as broad, slightly longer than F3 plus F4, with C1 and C2 subequal in length, each about 1·5 times as long as broad, C3 much shorter; sensilla rather sparse, decumbent with very short projecting blades; segments of flagellum with relatively long and hardly curved pale setae, some of which are nearly as long as the segments themselves. Mid lobe of mesoscutum with 3 adnotaular setae on each side. Forewing: *SM* with 2 dorsal setae; *M* 2·9 times length of *ST*. Other features as in ♂ *oreophilus*.

The ♀ which is provisionally associated with the above ♂ differs from the ♀ of *oreophilus* and *distichus* in the following characters. Antenna (Fig. 171) with funicle more slender, not stouter than pedicellus, its segments subequal in length, each 1·6–1·8 times as long as broad; clava 3·3–3·5 times as long as broad, subacute, its terminal spine slightly longer and more slender; sensilla slender, most with a moderately long decumbent base and an equally long projecting blade; curved setae of F2, F3 and claval segments longer, some slightly longer than the segments that bear them and reaching slightly beyond their tips. Forewing: *M* 2·6–3·0 times length of *ST*; cilia of apical margin 0·33–0·50 length of *ST*. Gaster slightly shorter than thorax, bluntly pointed or obtuse.

Antennal scape testaceous beneath; pedicellus testaceous benath and at tip; flagellum testaceous or brownish testaceous. Length 0·70–0·75 mm.

MATERIAL EXAMINED

1 ♂, 3 ♀. Holotype ♂, **France**: Aveyron, Gorges du Trévézel, 31.vii.1974 (*Graham*) (BMNH).

Non-paratypic material. **Czechoslovakia**: 2 ♀, Slovakia, Roszutec, 24–25.vii.1963 (*Bouček*) (BMNH). 1♀, **France**; Hautes Pyrénées, Valle d'Aure, 18.vii.1980 (*S. Compton*) (S. Compton coll.).

HOST. Unknown.

Aprostocetus (Chrysotetrastichus) masculinus sp. n.

(Fig. 173)

♂. Head slightly broader than mesoscutum. Antenna (Fig. 173) with scape swollen, although long, 2·5–2·7 times as long as broad, reaching a little above the vertex, with ventral plaque extending most of its length; pedicellus plus flagellum about 1·6 breadth of mesoscutum; pedicellus about twice as long as broad, very slightly longer than F1; funicle slender, hardly stouter than pedicellus, F1 as long as or a little shorter than F2, 1·6–1·8 times as long as broad, following segments about twice as long as broad; clava slightly broader than F4, 4·0–4·3 times as long as broad, nearly as long a F2 plus F3 plus F4, with C1 hardly longer than broad, C2 nearly twice as long as broad, C3 shorter; sensilla moderately numerous, slender and long, with moderately long decumbent bases and about equally long projecting blades; setae mostly short. Mid lobe of mesoscutum with 3 adnotaular setae on each side. Forewing: *SM* with 2 dorsal setae; *M* 2·50–2·75 times length of *ST*. Gaster short oval, shorter and slightly narrower than thorax, with ventral plica.

Body black with strong green to blue-green metallic tint. Antennal scape yellowish with ventral plaque brown; pedicellus yellowish, more or less darkened above; flagellum brownish testaceous. Legs yellow with mid and hind coxae dark like the body; fore tarsi, and tips of mid and hind tarsi, brownish. Tegulae dark. Wings hyaline, venation testaceous to brown. Length 0·6–0·7 mm.

♀. Not definitely associated. For characters of possible ♀ see key to species (females).

MATERIAL EXAMINED

2 ♂. Holotype ♂, **France**: Vaucluse, near Saumane, in a slightly marshy place, 15.vii.1978 (*Graham*) (BMNH).

Paratype 1 ♂, same data as holotype (BMNH).

HOSTS. Unknown.

COMMENT. The ♂ of *masculinus* differs from all others of this group in the very long ventral plaque of the antennal scape.

Aprostocetus (Chrysotetrastichus) cebennicus sp. n.

(Figs 167, 174, 673)

♀. Differs from those of *distichus* and *oreophilus* as follows. Antenna (Fig. 167) with pedicellus relatively longer, 2·3–2·5 times as long as broad; F1 not or hardly shorter than F2. Mid lobe of mesoscutum usually with 5 adnotaular setae on each side, in one ♀ with only 4. Forewing 2·10–2·15 times as long as broad; *SM* usually with 3 dorsal setae (one ♀ has 4 setae on one wing, although another has only 2 on one forewing); pilosity somewhat denser; cilia of apical margin very short, 0·20–0·25 length of *ST*. Gaster (Fig. 164) slightly longer than thorax, or as long as head plus thorax, acute and vey slightly acuminate, 1·35–1·80 times as long as broad; last tergite triangular, only 1·3–1·6 times as broad as long; ovipositor sheaths projecting by 0·15–0·33 length of last tergite.

Wings slightly grey-tinged. Length 1·0–1·2 mm.

♂. Antenna (Fig. 174): scape 2·4–2·8 times as long as broad, with ventral plaque about 0·5 length of scape; pedicellus plus flagellum 1·15–1·30 breadth of mesoscutum; pedicellus 2·3–2·5 times as long as broad; F1 1·15–1·30 times as long as broad, following segments each 1·20–1·40 times as long as broad; clava 2·8–3·1 times as long as broad, its segments not or hardly longer than broad; sensilla moderately numerous, decumbent with short projecting blades; flagellum with relatively short setae. Mid lobe of mesoscutum usually with 4, rarely 5, adnotaular setae on each side. Wings with slightly longer cilia on apical margin. Genitalia (Fig. 673).

Colour of flagellum varies from brownish testaceous to nearly black. Length 1·0–1·2 mm.

MATERIAL EXAMINED

7 ♂, 8 ♀. Holotype ♀, **France**: Aveyron, La Pezade, near La Convertoirade, 11.vii.1977 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♂, Aveyron, Gorges du Trévézel, between Espinassous and Villemagne, 31.vii.1974 (*Graham*) (BMNH); 1 ♂, 2 ♀, La Pezade, 11.vii.1977 (*Graham*) (BMNH), 3 ♂, 1 ♀ (*Gijswijt*) (MJG); 1 ♀, Gard, Homs, near Alzon, 8.vii.1977 (*Graham*) (BMNH), 1 ♀, Crespian, 6.vii.1977 (*Gijswijt*) (MJG); 1 ♂, Hérault, St Paul et Vamalles, 9.viii.1976 (*Graham*) (BMNH); 1 ♂, Vaucluse, Mont Ventoux, Col de Perrache, 22.vii.1978, 1 ♀, 28.vi.1980; 1 ♀, near Bédoin, 14.vii.1980 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. Most of the above specimens were swept from grass and other herbs on calcareous substrate.

Subgen. *APROSTOCETUS* Westwood

Aprostocetus Westwood, 1833: 444; Kurdjumov, 1913: 252; Erdös, 1954: 353; Graham, 1961*a*: 4–37; 1961*b*: 34–64, in part; Burks, 1979: 1002–1003, in part. Type-species: *Aprostocetus caudatus* Westwood, by monotypy.

Trichoceras Ratzeburg, 1844*a*: in key on unnumbered folder between pp. 40 and 41, 171. Type-species: *Trichoceras erythrophthalmus* Ratzeburg, by monotypy. [Synonymized with *Aprostocetus* by Graham, 1961*b*: 35.]

Geniocerus Ratzeburg, 1848: 175; Kurdjumov, 1913: 247–250, in part; Erdös, 1954: 353–360 [excluding cohors 10.] [Replacement name for *Trichoceras* Ratzeburg.]

Lonchentedon Ratzeburg, 1852: 215. Type-species: *Eulophus longicaudatus* Förster, by monotypy.

Hyperteles Förster, 1856: 84, 86. Type-species: *Eulophus elongatus* Förster, by original designation and monotypy. [Synonymized with *Aprostocetus* by Graham, 1961*b*: 35.]

Oxymorpha Förster, 1856: 145. [Unnecessary replacement name for *Hyperteles* Förster.]

Myiomisa Rondani, 1877: 189. Type-species: *Myiomisa microscopica* Rondani, by monotypy. [Synonymized with *Aprostocetus* by Graham, 1961*b*: 36.]

Syntomosphyrum Förster, 1878: 60. Type-species: *Syntomosphyrum fulvipes* Förster, by monotypy. [Synonymized with *Aprostocetus* by Graham, 1961*b*: 36.]

Hadrothrix Cameron, 1913: 102. Type-species: *Hadrothrix purpurea* Cameron, by monotypy.

[*Tetrastichus* Haliday; Thomson, 1878: 278–298, in part; Burks, 1943: 505–608, in part; Domenichini, 1966*a*: 61–204; 1966*b*: 13–100; 1967: 75–110; Erdös, 1969: 43–48; 1971: 208–250; Burks, 1979: 990–1002, in part; Graham, 1985*b*: 1059–1071, in part. Misidentifications.]

Keys to European species of subgenus *Aprostocetus*

Females

1 Brachypterous forms: forewings reaching at most to about middle of gaster, but sometimes hardly beyond its base, usually 3–4 times as long as broad; venation in the shortest winged forms tending to be abnormal (Fig. 186). Body black, non-metallic. Mid lobe of mesoscutum without a median line. Head very distinctly broader than mesoscutum 2

— Macropterous forms: forewings normally reaching at least beyond middle of gaster, nearly always less than 3 times as long as broad; venation normal. The other characters often different from the above 3

2 Antenna (Fig. 195) with flagellum very stout; funicular segments not longer than broad, or at most the first slightly elongate; clava at most twice as long as broad. Antennal toruli level with or slightly below ventral edge of eyes. Eyes with long pilosity (Fig. 197). Submedian lines of scutellum absent. Forewing (Fig. 198) variable in length but usually reaching to about middle of gaster; venation usually normal, slightly abnormal in the shortest-winged forms **fulvipes**(p. 358)

— Antenna (Fig. 187) with flagellum relatively slender; funicular segments longer than broad; clava about 3 times as long as broad. Antennal toruli about level with ventral edge of eyes. Eyes bare or virtually so. Submedian lines of scutellum present. Forewing (Fig. 186) reaching slightly beyond base of gaster; venation abnormal .... **brevipennis**(p. 355)

3 Antenna (Figs 182–185): funicle 4-segmented, the first segment usually longer than broad and bearing one or more sensilla, rarely quadrate and lacking sensilla; clava 3-segmented. Body non-metallic, black with yellow markings, or mainly yellow 4

— Antennal funicle in European species 3-segmented [in a few extralimital species 4-segmented, but then clava 2-segmented] 6

4 Malar sulcus with a long triangular fovea below the eye. Antenna (Fig. 182) with pedicellus at least very slightly shorter than first funicular segment, the latter nearly or just as long as second funicular segment, and provided with sensilla. Body on average more extensively marked with yellow and tan, sometimes mainly pale. Large species, length 2·8–4·0 mm, with gaster lanceolate and nearly twice as long as head plus thorax .... **luteus**(p. 364)

— Malar sulcus not foveate. Antenna with pedicellus varying from a little shorter, to much longer, than the first funicular segment, the latter much shorter than the second and sometimes without sensilla. Body tending to have less extensive pale areas, sometimes mainly dark 5

5 Gaster about twice as long as head plus thorax, 4·5–6·0 times as long as broad, acuminate; last tergite 2·0–2·5 times as long as broad. Body length 2·9–4·8 mm .... **elongatus**(p. 363)

— Gaster 1·2–1·3 times as long as head plus thorax, 1·9–2·5 times as long as broad, less acuminate; last tergite at most 1·3 times as long as broad. Body length 1·35–2·30 mm **collega**(p. 365)

6 Apical margin of forewing (Fig. 188) bare. Body non-metallic, testaceous with some brown markings, or more extensively brown. Antenna (Fig. 189): clava acute, with a conspicuously long terminal spine; anterior edge of scape with numerous setae. Mid lobe of mesoscutum without a median line. Submedian lines of scutellum very weak or absent............ **calvus**(p. 362)

— Apical margin of forewing ciliate throughout. The other characters rarely all present in combination 7

7 Thorax in dried specimens strongly flattened dorsoventrally, so that the mesoscutum, scutellum, dorsellum and propodeum all lie virtually in the horizontal plane. Antenna (Fig. 192) with scape only twice as long as broad, broadest in upper half, its anterior part laminar; funicular segments at most as long as broad. Mid lobe of mesoscutum without a median line. Submedian lines of scutellum weak or obsolescent. Body black or brown, non-metallic **calamarius**(p. 357)

— Thorax seldom so strongly flattened, if so then antennal scape less expanded, at least 3 times as long as broad, and one or more of the funicular segments at least slightly longer than broad. The other characters mentioned often different 8

8 Species with following combination of characters: antenna (Fig. 190) with clava shorter than funicular segments 2 plus 3 and having a long terminal spine; antennae, and legs including coxae yellow; thorax very weakly arched dorsally; head and thorax slightly metallic, gaster yellowish proximally, lanceolate and about twice as long as thorax, with ovipositor sheaths somewhat exserted; scutellum with submedian lines, anterior setae shorter than posterior setae and placed before the middle, about equidistant from submedian and sublateral lines;

marginal vein of forewing nearly 5 times length of stigmal vein .... ***aquaticus*** (p. 286)

— Antenna different in form. Thorax usually moderately to strongly arched dorsally; if not then *either* body non-metallic, black, *or* gaster less elongate, *or* submedian lines of scutellum weak or absent. Antennae and legs usually relatively darker. Marginal vein of forewing usually shorter relative to the stigmal vein 9

9 Thorax much depressed dorsoventrally (Fig. 200) so that dorsal surfaces of mesoscutum, scutellum, dorsellum and propodeum lie in nearly the same plane, or form in profile at most a very weak curve. Mid lobe of mesoscutum normally without a median line (rarely indicated near scutellum). Submedian lines of scutellum most often weak or absent; anterior pair of setae usually in or slightly before the middle, occasionally a little behind the middle. Body black, non-metallic or with at most a very weak bronze or bluish tinge, rarely yellow-marked. Propodeum normally as long as or a little longer than the dorsellum, rarely slightly shorter, its hind corners nearly rectangular. Head slightly broader than mesoscutum 10

— Thorax at least distinctly, often strongely, arched dorsally, the dorsellum and propodeum sloping at 30°–70° relative to tangential plane of mesoscutum and scutellum; if weakly arched then mid lobe of mesoscutum with at least some trace of a median line *and* submedian scutellar lines distinct (as is most often the case in this section). Body metallic or non-metallic, sometimes yellow-marked. Propodeum variable in length, sometimes distinctly shorter than dorsellum; hind corners usually not subrectangular. Head often not broader than mesoscutum 20

10 Propodeal callus with a row of 5–7 setae. Malar sulcus with a fovea below the eye, extending 0·25–0·35 the length of the gena. Propodeal spiracles rather large, their length nearly half the length of the propodeum at level of spiracle. Gaster short ovate, at most slightly longer than thorax, 1·2–1·5 times as long as broad; ovipositor sheaths concealed in dorsal view. Tegulae blackish; femora and tibiae partly fuscous; coxae black .... ***subplanus*** (p. 294)

— Propodeal callus with 2 setae near the spiracle (very rarely a third in aberrations). Malar sulcus normally without a fovea, rarely a very small one. Propodeal spiracles relatively smaller. Gaster long-ovate to lanceolate, slightly to much longer than head plus thorax, 1·8–4·0 times as long as broad; ovipositor sheaths at least very slightly, often far, exserted. Tegulae usually testaceous, sometimes partly brown; femora usually, tibiae nearly always, testaceous; coxae often more or less testaceous 11

11 Antenna (Figs 202, 204) with scape slightly to distinctly longer than an eye, reaching at least slightly above the vertex; flagellum relatively slender. Gaster: exserted portion of ovipositor sheaths plus postcercale 0·45–0·90 length of hind tibia; ovipositor sheaths 0·30–0·85 length of hind tibia. Eyes with very long pilosity. Some setae of vertex somewhat longer than diameter of an ocellus 12

— Antenna (Figs 195, 201, 207–210) with scape at least a little shorter than an eye, not reaching above vertex; flagellum slender or stout. Gaster: exserted portion of ovipositor sheaths plus postcercale 0·17–0·65 length of hind tibia; ovipositor sheaths 0·06–0·50 length of tibia. Eyes with long or short pilosity. Setae of vertex sometimes relatively shorter, or longer, than in the above 13

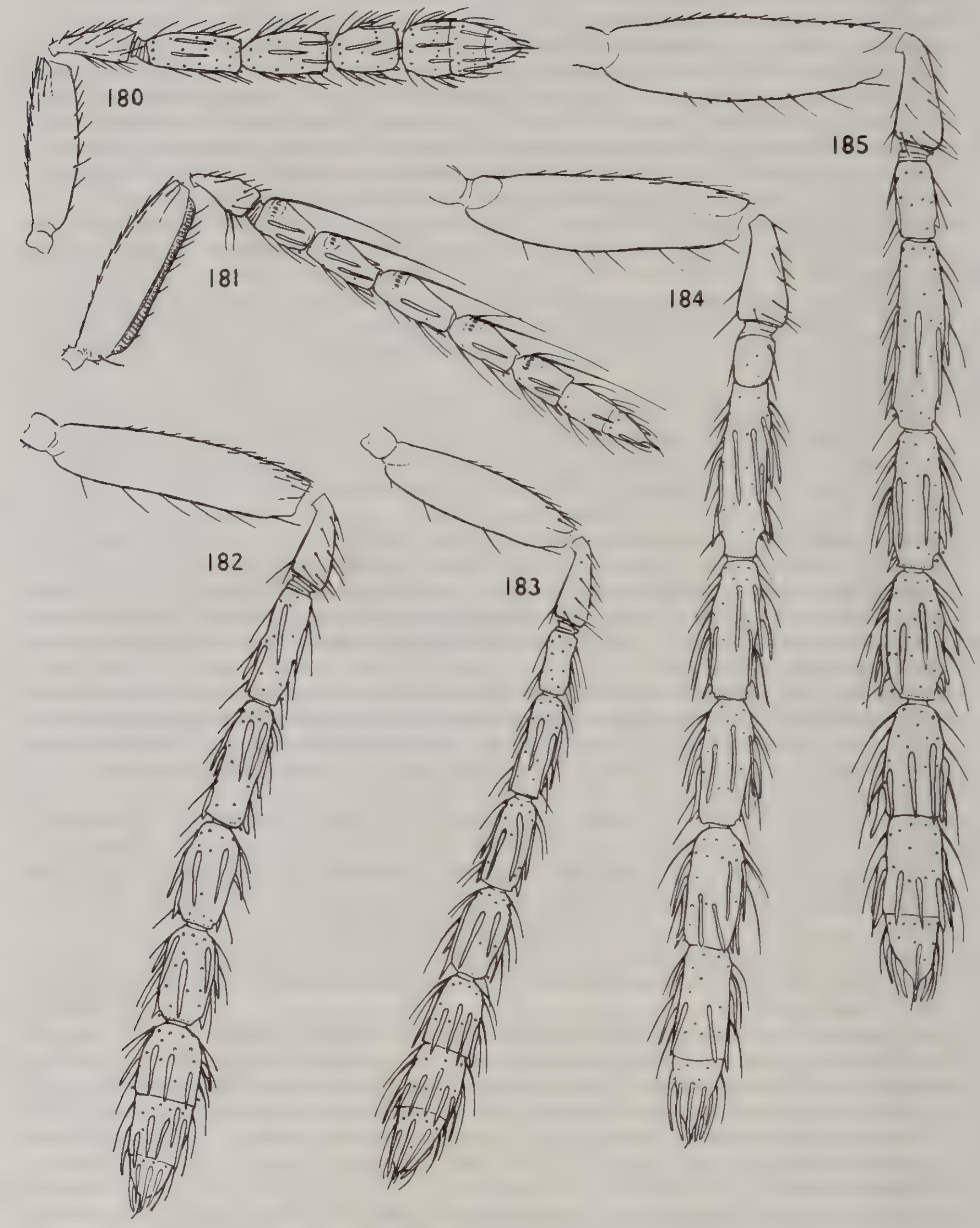
12 Ovipositor sheaths plus postcercale 0·7–0·9 length of hind tibia. Antenna (Fig. 202): scape 1·30–1·35 length of eye; pedicellus 2·8–3·0 times as long as broad; first funicular segment 2·0–2·6 times as long as broad .... ***prolidice*** (p. 360)

— Ovipositor sheaths plus postcercale 0·45–0·65 length of hind tibia. Antenna (Fig. 204): scape slightly longer than an eye; first funicular segment 1·7–2·0 times as long as broad .. ***apama*** (p. 359)

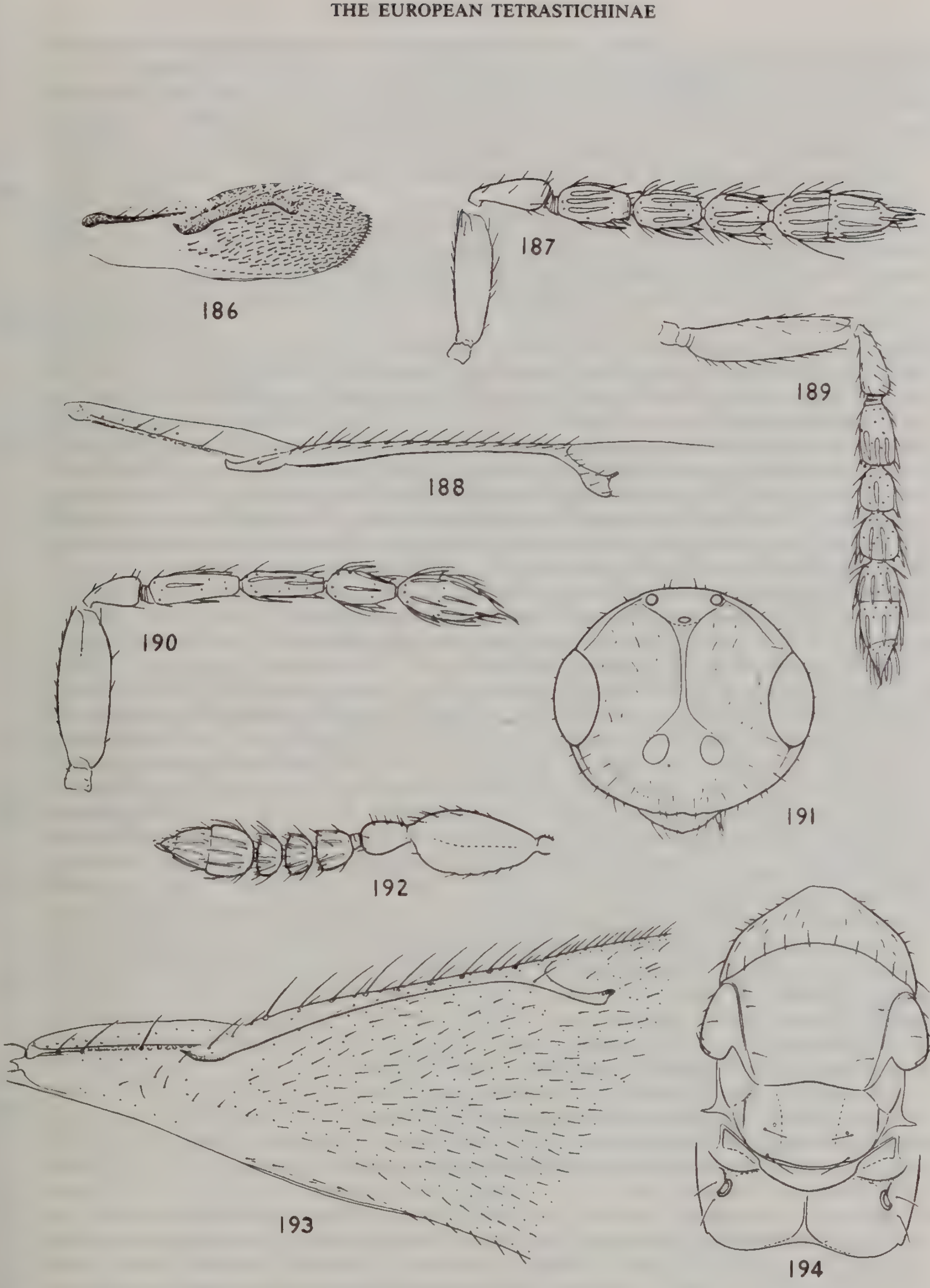
13 Antenna (Fig. 195): flagellum stout; first funicular segment much stouter than pedicellus, third slightly broader than long; pedicellus conspicuously setose. Setae of vertex long, length of the longest about twice the diameter of an ocellus. Setae of pronotum, mesoscutum and scutellum relatively long. Eyes (Fig. 197) with very long pilosity. Scutellum without submedian lines .... ***fulvipes*** (p. 358)

— Antenna with flagellum more slender; first funicular segment not or only slightly stouter than the pedicellus, third quadrate to 1·6 times as long as broad; pedicellus relatively less setose. Setae of vertex shorter, their length at most slightly greater than the diameter of an ocellus. Setae of pronotum, mesoscutum and scutellum often relatively shorter. Eyes with moderately long, to very short, pilosity. Scutellum with or without submedian lines 14

14 Gaster lanceolate, much longer than head plus thorax, acuminate; ovipositor sheaths distinctly exserted, ovipositor sheaths plus postcercale 0·33–0·65 length of hind tibia. Submedian lines of scutellum absent or weak 15



Figs 180–185 Antennae. 180, 181, *Aprostocetus* (*Tetrastichodes*) *hagenowii* (Ratzeburg): (180) ♀; (181) ♂. 182, *Aprostocetus* (*Aprostocetus*) *luteus* (Ratzeburg) ♀. 183, *A.* (*A.*) *collega* (Ratzeburg) ♀. 184, 185, *A.* (*A.*) *elongatus* (Förster) ♀: (184) forma *intermedius* (Thomson); (185) forma typica.



Figs 186–194 186, 187, *Aprostocetus* (*Aprostocetus*) *brevipennis* sp. n. ♀; (186) forewing; (187) antenna (holotype). 188, 189, *A.* (*A.*) *calvus* (Domenchini) ♀: (188) forewing, anterior; (189) antenna. 190, *A.* (*A.*) *aquaticus* (Erdös) ♀, antenna. 191–194, *A.* (*A.*) *calamarius* Graham ♀: (191) head, frontal; (192) antenna; (193) forewing; (194) thorax.

— *Either* the gaster is ovate and not or only slightly longer than head plus thorax, or ovipositor sheaths at most very slightly exserted; *or* submedian lines of scutellum are very distinct 16

15 Antenna (Fig. 201): combined length of pedicellus and flagellum not greater than breadth of mesoscutum; pedicellus in dorsal view 2·0–2·2 times as long as broad; funicular segments relatively shorter, first 1·2–1·5, second 1·3–1·7, third 1·0–1·2 times as long as broad. Eyes with moderately long pilosity. Ovipositor sheaths plus postcercale 0·57–0·65 length of hind tibia .... ***planiusculus***(p. 360)

— Antenna (Fig. 207): combined length of pedicellus and flagellum slightly greater than breadth of mesoscutum; pedicellus 2·7–2·8 times as long as broad; funicular segments relatively longer, the first 2·0–2·3, second 1·50–1·75, third about 1·5 times as long as broad. Eyes with very short pilosity. Ovipositor sheaths plus postcercale 0·33–0·35 length of hind tibia ***durmitorensis***(p. 361)

16 Submedian lines of scutellum very indistinct or obsolescent. Antenna (Fig. 451): pedicellus fully 2·5 times as long as broad; flagellum strongly clavate; first funicular segment more than twice as long as broad, the following segments decreasing rapidly in length. Forewing (Fig. 452) with stigma rather large, separated by 1·25–1·50 its height from costal edge of wing. Body black; antennal scape, pedicellus, and legs including all coxae, yellow .... ***glandicola***(p. 361)

— *Either* submedian lines of scutellum very distinctly impressed *or*, if less distinct, then antennal pedicellus at most 2·3 times as long as broad and flagellum rather less clavate with first funicular segment less than twice as long as broad. Forewing with stigma smaller, separated by at least twice its height from costal edge of wing. Body black or more or less yellow-marked; pedicellus usually infuscate; legs with at least hind coxae partly infuscate 17

17 Antennal pedicellus 2·6–2·9 times as long as broad. Scutellum with anterior pair of setae, or both pairs, distinctly nearer to submedian than to sublateral lines 18

— Antennal pedicellus 2·0–2·3 times as long as broad. At least the anterior pair of scutellar setae equidistant from submedian and sublateral lines 19

18 Body black; head and thorax with weak bluish tinge. Antenna (Fig. 208) with funicular segments relatively shorter, the third only slightly longer than broad. Reticulation of mesoscutum more distinct, the sclerite less shiny .... ***doksyensis***(p. 356)

— Head, thorax and gaster yellow-marked. Antenna (Fig. 384) with funicular segments relatively longer, the third about 1·6 times as long as broad. Reticulation of mesoscutum delicately engraved, the sclerite more shiny .... ***debilitatus***(p. 356)

19 Body black with at most mouth-edge and sutures of face testaceous. Both pairs of scutellar setae slightly nearer to sublateral than to submedian lines, subequal in length. Antenna (Fig. 209) .... ***esherensis***(p. 357)

— Mouth-edge, prosternum, prepectus, posterior part of mesoscutum, dorsellum, and base of gaster, more or less testaceous. Anterior setae of scutellum equidistant from submedian and sublateral lines, somewhat shorter than the posterior setae which are nearer to the submedian lines. Antenna (Fig. 210) .... ***bouceki***(p. 357)

20 Species with the following combination of characters: mid lobe of mesoscutum with at least a partial second row of adnotaular setae on each side, occasionally three rows; propodeum broadly and deeply emarginate posteriorly, medially much shorter than the dorsellum; hind coxae tending to have slightly raised reticulation; body black, non-metallic or with at most an extremely weak bluish tinge; gaster lanceolate, much longer than head plus thorax 21

— Mid lobe of mesoscutum nearly always with a single row of adnotaular setae on each side, if with a second row then propodeum as long as dorsellum and gaster short. The other characters sometimes different 22

21 Mid lobe of mesoscutum dull, with only moderately fine, raised reticulation whose areoles are mostly only a little longer than broad (a few up to twice as long as broad). Gaster nearly 1·5 times as long as head plus thorax, about 3·5 times as long as broad. Antenna (Fig. 262) with funicular segments subequal in length, or decreasing only slightly, the third at least 1·5 times as long as broad .... ***asperulus***(p. 212)

— Mid lobe of mesoscutum slightly shiny, with extremely fine, superficial or lightly engraved reticulation whose areoles are mostly 3–4 times as long as broad. Gaster fully twice as long as head plus thorax, more elongate and more acuminate than in alternate. Antenna with funicular segments decreasing rapidly in length, the third not or hardly longer than broad ***diplosidis***(p. 213)

22 Forewing: submarginal vein with 2 dorsal setae 23

— Forewing: submarginal vein with 3 or more dorsal setae 24

23 Body not yellow-marked, except sometimes base of gaster; either green to blue, bronze-green, or bronze-black. Gaster (not counting ovipositor sheaths if far exserted) at most 1·8 times as long as broad; one seta of each cercus 1·5–1·9 times the length of the next longest. Very small species, length 0·6–1·2 mm, with relatively short, strongly convex thorax; mesoscutum and scutellum shiny, with excessively fine and delicate, superficial or lightly engraved reticulation. Propodeal spiracles very small, circular, almost touching hind margin of metanotum see subgen. ***CHRYSOTETRASTICHUS*** (p. 117)

— Body usually with some testaceous or yellow markings at least on head and/or thorax; if not then gaster long-ovate to lanceolate, at least as long as head plus thorax, with the two longest setae of each cercus subequal in length, and the mesoscutum and scutellum less shiny, with stronger reticulation. Propodeal spiracles usually larger 24

24 Gaster (Figs 211, 214, 230, 235, 238) with the two longer setae of each cercus subequal in length, or one of them at most slightly longer than the other, curved or nearly straight, often pale. Mid lobe of mesoscutum with areoles of the reticulation in many species at most twice as long as broad on average, occasionally 3 times or more 25

— Gaster (Figs 263, 264, 291, 299, 301–304, 314–317, 348, 354) with one seta of each cercus 1·5–2·0 times the length of the next longest, usually more or less sinuate or kinked in the middle of its length, usually dark. Mid lobe of mesoscutum with areoles of reticulation in most species 3–4 times as long as broad, occasionally shorter 46

25 Propodeal callus with (3–) 4–6 setae, one of them near the hind corner of the propodeum; propodeum broadly and rather deeply emarginate, medially at least very slightly shorter than the dorsellum. Head and thorax slightly to extensively yellow-marked, the dark parts without or with hardly perceptible bluish metallic tinge. Mid lobe of mesoscutum without a median line, rather dull, with excessively fine reticulation whose areoles are mostly twice as long as broad or less. Setae of thoracic dorsum black .... ***westwoodii*** (p. 219)

— *Either* the propodeal callus has only 2 setae near the spiracle; *or* the propodeum medially is narrowly and shallowly emarginate, as long as or even a little longer than the dorsellum, the dark parts of the head and thorax have a distinct metallic tint, and the mid lobe of the mesoscutum has at least some trace of a median line (occasionally only in hind half). Setae of thoracic dorsum sometimes pale 26

26 Gaster (Fig. 211) with ovipositor sheaths far exserted; ovipositor sheaths plus postcercale equal to or slightly greater than length of hind tibia. Antenna (Fig. 212): clava 3·0–3·3 times as long as broad; funicular segments at least twice as long as broad. Propodeum fully as long as dorsellum; callus with 3–6 setae. Body extensively yellow-marked .... ***bucculentus*** (p. 270)

— *Either* ovipositor sheaths are less exserted or hardly exserted, with sheaths plus postcercale distinctly less than length of hind tibia; *or* the antennal clava is at most 2·5 times as long as broad, and at least the third funicular segment is less than twice as long as broad 27

27 Ovipositor sheaths far exserted, sheaths plus postcercale 0·95–1·22 length of hind tibia. Antenna (Fig. 213) yellow; flagellum short, clavate; clava less than twice as long as broad; funicular segments short .... ***malagensis*** (p. 268)

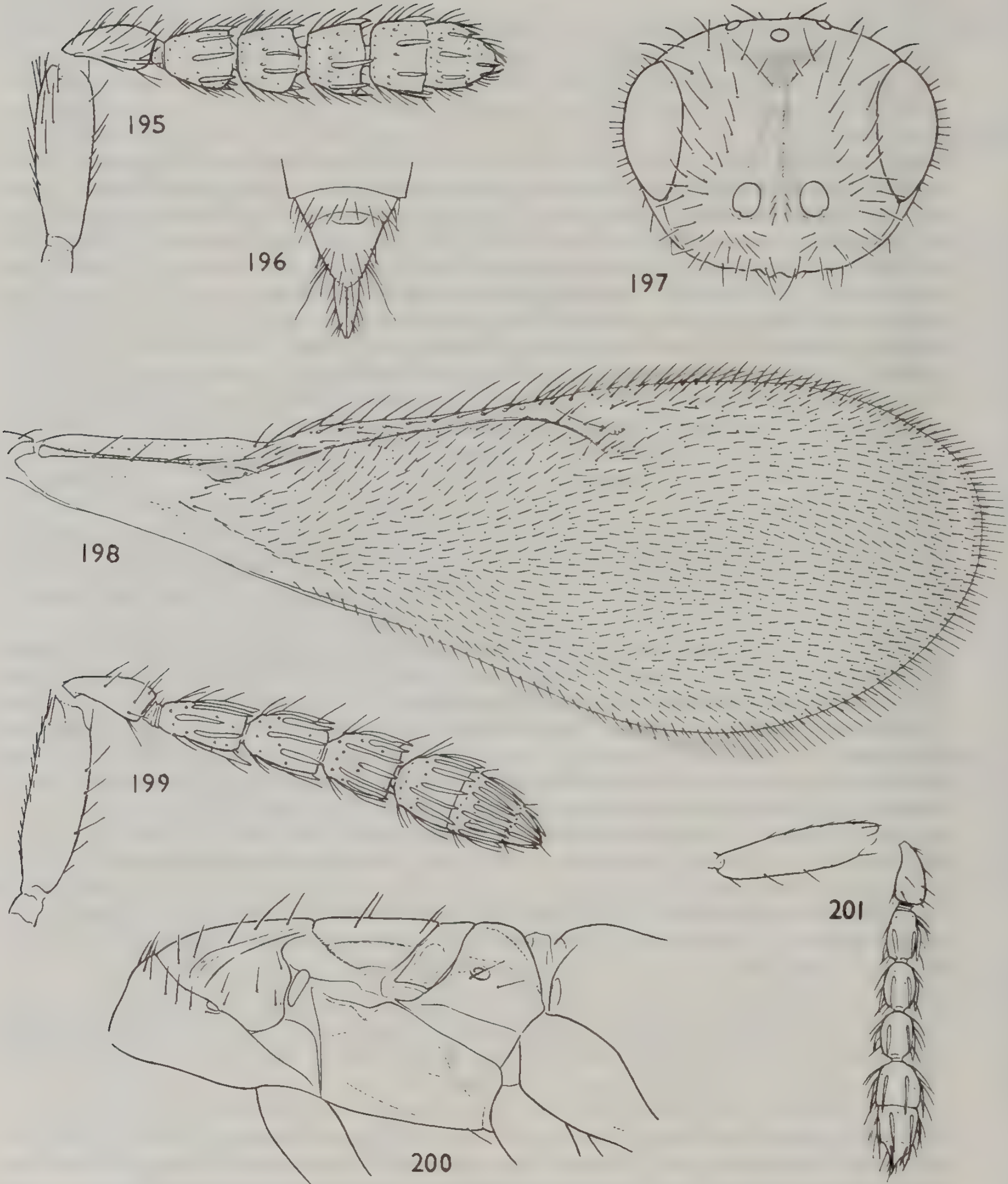
— Ovipositor sheaths less far exserted, sheaths plus postcercale at most as long as hind tibia in some *larzacensis*, but then antennae black. Antenna sometimes with relatively longer funicular segments 28

28 Gaster (see Fig. 214) with ovipositor sheaths well exserted, sheaths plus postcercale at least 0·5 length of hind tibia, sometimes as long as the tibia. Antenna black; combined length of pedicellus and flagellum somewhat greater than breadth of mesoscutum. Body brightly metallic, with at most restricted yellow markings.
Propodeal callus with 2 setae 29

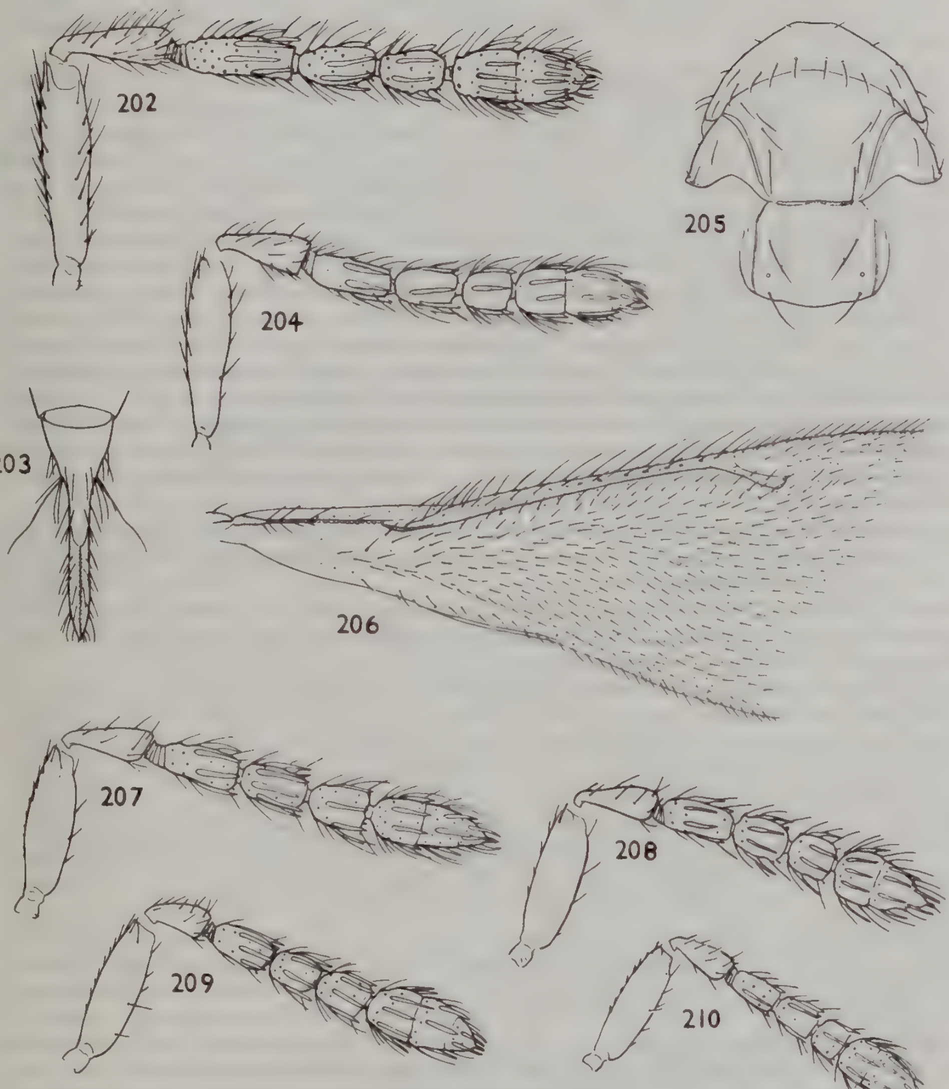
— Gaster with ovipositor sheaths usually less, or only slightly, exserted, and sheaths plus postcercale usually less than 0·5 length of hind tibia; if as much as 0·5 then *either* antenna brownish or partly testaceous, combined length of pedicellus and flagellum not greater than breadth of mesoscutum, body weakly metallic; *or* body extensively yellow-marked 30

29 Propodeum strongly transverse, its breadth between the spiracles about 3 times its length at level of spiracles, broadly emarginate medially where it is usually slightly shorter than (occasionally as long as) the dorsellum. Antenna (Fig. 215) with funicle proximally not or hardly stouter than the pedicellus, but thickening slightly distad. Body with at most mouth-edge and upper angle of mesopleuron yellow. Ovipositor sheaths plus postcercale (Fig. 214) 0·5 or more length of hind tibia, rarely as long as the tibia .... ***larzacensis*** (p. 267)

— Propodeum less transverse, its breadth between the spiracles about 2·5 times its length at level



Figs 195–201 195–198, *Aprostocetus* (*Aprostocetus*) *fulvipes* (Förster) ♀: (195) antenna; (196) gaster, caudal; (197) head, frontal; (198) forewing. 199, *A.* (*A.*) *subplanus* sp. n. ♀, antenna. 200, 201, *A.* (*A.*) *planiusculus* (Thomson) lectotype ♀: (200) thorax, profile; (201) antenna.



Figs 202–210 202, *Aprostocetus* (*Aprostocetus*) *prolidice* sp. n. ♀, antenna. 203–206, *A.* (*A.*) *apama* (Walker) ♀: (203) gaster, caudal; (204) antenna; (205) thorax, anterior; (206) forewing. 207, *A.* (*A.*) *durmitorensis* sp. n. ♀, antenna. 208, *A.* (*A.*) *doksyensis* sp. n. ♀, antenna. 209, *A.* (*A.*) *esherensis* sp. n. ♀, antenna. 210, *A.* (*A.*) *bouceki* sp. n. ♀, antenna.

of spiracles, narrowly and shallowly emarginate, medially fully as long as, or slightly longer than the dorsellum. Antenna (Fig. 216) with funicle filiform and distinctly stouter than the pedicellus. Face, orbits, marks on front of mesoscutum, and dorsellum, yellow. Ovipositor sheaths plus postcercale 0·50–0·55 length of hind tibia .... ***aartseni*** (p. 267)

30 Ovipositor sheaths plus postcercale about 0·7 length of hind tibia; ovipositor sheaths at least 2·5 times as long as postcercale. Body extensively yellow. Propodeal callus with 2 setae ***levadiensis*** (p. 267)

— Ovipositor sheaths plus postcercale at most 0·52 length of hind tibia; sheaths at most 1·5 times as long as postcercale. Body often without yellow markings. Propodeal callus sometimes with more than 2 setae 31

31 Antenna (Fig. 218): clava with conspicuous terminal spine which is fully as long as the third segment of the clava. Pronotum subconical, at least half as long as mesoscutum. Head slightly broader than mesoscutum and rather thick anteroposteriorly. Body yellowish with fuscous markings. Propodeal callus with 2 setae .... ***crassiceps*** (p. 272)

— Antenna (Figs 219, 221, 225, 226, 233, 234) with terminal spine of clava nearly always short to very short and inconspicuous; if long then pronotum much shorter, head less thick anteroposteriorly, body black with metallic tints, propodeal callus sometimes with more than 2 setae. Pronotum (except in some *tompanus*) relatively shorter 32

32 Antenna (Fig. 219): flagellum testaceous, with strongly outstanding pilosity, clavate, with short funicular segments, the first much shorter than the pedicellus. Forewing (Fig. 220): stigmal vein at an angle of 55°–60° to costal edge of wing; stigma relatively large; speculum very narrow; marginal vein about 3 times as long as stigmal. Mouth nearly twice malar space. Mandible large, with acute teeth. Body black with weak bronze tinge .... ***taxi*** (p. 261)

— Antennal flagellum usually blackish and with less outstanding pilosity, if with strongly outstanding pilosity (*aristaeus*, *arrabonicus*) then forewing with stigmal vein at 45°–50°, stigma smaller; marginal vein at least 3·5 times as long as stigmal. Mouth less broad. Madibles smaller. Body colour sometimes otherwise 33

33 Antenna (Fig. 221): flagellum short, clavate, with relatively long outstanding pilosity. Setae of hind margin of pronotum, and adnotaular setae of mesoscutum, long and suberect (Fig. 223). Body black with metallic tints .... ***aristaeus*** (p. 262)

— Antenna: flagellum in most species with shorter and only slightly outstanding pilosity; if with rather longer and somewhat outstanding pilosity (*arrabonicus*) then setae of pronotum and mesoscutum relatively shorter and reclinate 34

34 Propodeal callus with 6–8 setae. Antenna (Fig. 225) funicle stout, proximally about 1·5 times as broad as pedicellus in dorsal view, but flagellum tapering slightly distad; clava hardly as broad as first funicular segment, with very short terminal spine. Forewing with costal cell only about 6 times as long as broad; marginal vein thick, 2·3 times length of stigmal, the latter also thick, stigma rather large. Head about 1·2 times as broad as mesoscutum .... ***laticeps*** (p. 259)

— Propodeal callus most often with 2 setae; if with 3–7 setae then antennal funicle proximally at most slightly stouter than pedicellus, thickening slightly distad, clava distinctly broader than first funicular segment, forewing with costal cell at least somewhat narrower than in *laticeps*, marginal vein longer relative to stigmal vein, head hardly or only about as broad as mesoscutum 35

35 Antenna (Fig. 224): clava 3·5–4·0 times as long as broad, acute, with a prominent terminal spine. Forewing 2·4–2·7 times as long as broad; beyond the speculum uniformly and rather densely pilose. Thorax 1·65–2·00 times as long as broad. Head very distinctly (up to 1·4 times) broader than mesoscutum .... ***stenus*** (p. 260)

— Antennal clava usually less than 3 times as long as broad and terminal spine relatively short and inconspicuous; if clava is 3·0–3·5 times as long as broad, then *either* forewing is at most 2·25 times as long as broad *or* claval spine of antenna is very short. Thorax sometimes less elongate. Head sometimes not broader than mesoscutum 36

36 Antenna (Fig. 226): clava 2·8–3·5 times as long as broad, with rather prominent terminal spine; funicular segments subequal in length, longer than broad. Forewing (Fig. 227) with venation rather thick. Body black with weak bluish tint .... ***bakkendorfi*** (p. 261)

— *Either* the antennal clava is relatively shorter; *or* its terminal spine is very short and inconspicuous, the forewing venation is thinner, and the body is yellowish-marked 37

37 Antenna (Fig. 228) with combined length of pedicellus and flagellum 1·25–1·35 times breadth of mesoscutum; flagellum rather slender, funicular segments not very dissimilar in length, the third 1·5–2·0 times as long as broad; clava 2·7–3·0 times as long as broad. Pronotum, in

dorsal view of thorax (Fig. 229), at least 0·3 length of mesoscutum. Propodeal callus with 2 (–3) setae .... ***tompanus***(p. 269)

— Antenna with combined length of pedicellus and flagellum usually not greater than breadth of mesoscutum, if slightly greater then *either* third funicular segment, *or* the clava, relatively shorter. Pronotum sometimes relatively shorter. Propodeal callus with 2–7 setae 38

38 Propodeal callus with 4–6 setae. Antennal clava (Fig. 231) with fairly conspicuous terminal spine which is fully half the length of the third claval segment; third funicular segment 1·4–1·7 times as long as broad. One seta of each cercus about 1·5 times the length of the next longest, and tending to be slightly sinuate. Moderately large species, length 1·8–2·4 mm ***occidentalis***(p. 266)

— *Either* the propodeal callus has only 2 setae; *or* the terminal spine of the antennal clava is short and inconspicuous (sometimes both characters are present simultaneously). The two longer setae of each cercus are subequal in length and slightly curved 39

39 Gaster lanceolate, 3·0–3·7 times as long as broad and 1·3–1·5 times length of head plus thorax, strongly acuminate; ovipositor sheaths well exserted, sheaths plus postcercale 0·45–0·52 length of hind tibia. Antenna (Fig. 236) with first funicular segment quadrate to 1·3 times as long as broad, much shorter than pedicellus; clava equal to two and a half to three preceding funicular segments in length. Small species, length 0·90–1·55 mm, body black or brown with weak metallic tints, usually with restricted testaceous markings on head, thorax and gaster ***meridionalis***(p. 273)

— Gaster 1·25–2·70 times as long as broad, at most slightly longer than head plus thorax, not or less strongly acuminate; ovipositor sheaths relatively less exserted; sheaths plus postcercale at most 0·2 length of hind tibia. Antenna with first funicular segment most often longer than broad, rarely much shorter than the pedicellus, clava relatively shorter. Species often larger 40

40 Antenna (Fig. 233) with first funicular segment quadrate or only very slightly longer than broad, not or only a little longer than second, and slightly shorter than the pedicellus, third segment very slightly transverse. Propodeal callus with 2 setae .... ***arrabonicus***(p. 265)

— Antenna with first funicular segment 1·25–2·50 times as long as broad, usually distinctly longer than the second and (except in dwarfs) as long as or very slightly longer than the pedicellus. Propodeal callus with 2–7 setae 41

41 Propodeal callus with 2 setae. Antenna (Figs 232, 234) with flagellum proximally hardly stouter than the pedicellus, but thickening obviously distad; clava about twice as broad as first funicular segment, often slightly less than twice as long as broad 42

— Propodeal callus normally with 4–7 setae (occasionally 3 in small specimens). Antenna (Figs 239–241, 243) with flagellum tending to be less slender proximally and thickening less obviously distad; clava normally less than twice as broad as first funicular segment, twice or somewhat more than twice as long as broad 43

42 Gaster (Fig. 235) 2·0–2·7 times as long as broad. Antenna (Fig. 232) with third funicular segment quadrate. Body more elongate; thorax 1·55–1·75 times as long as broad ***pausiris***(p. 263)

— Gaster (Fig. 238) 1·5–1·80 times as long as broad. Antenna (Fig. 234) with third funicular segment 1·3–1·5 times as long as broad. Body more squat; thorax 1·3–1·6 times as long as broad .... ***annulatus***(p. 265)

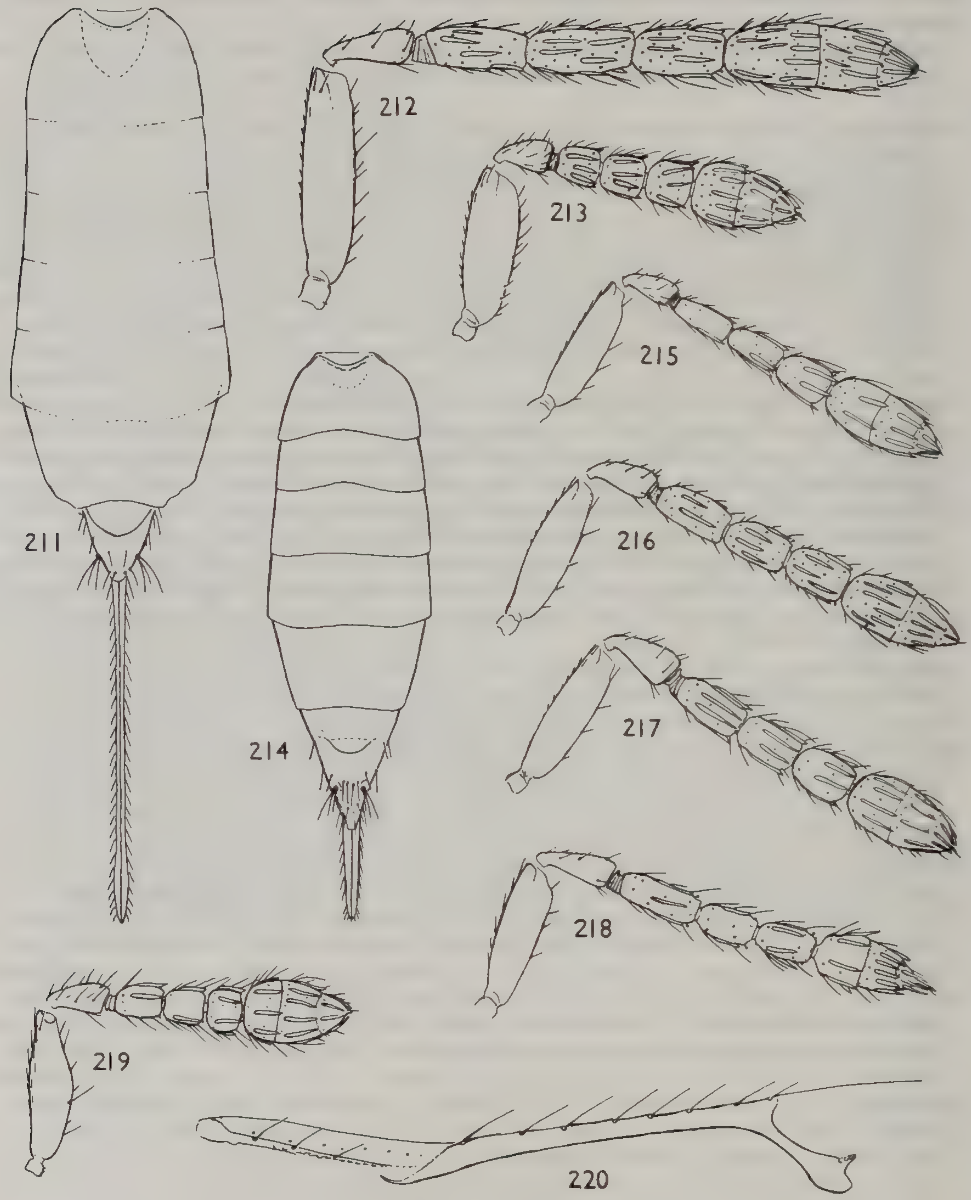
43 Gaster (Fig. 242) short-ovate, 1·4–1·6 (–1·7) times as long as broad, at most somewhat longer than thorax. Body dark; at most the face, genae, orbits, upper angle of mesopleuron, and spots on mesoscutum, scutellum and dorsellum, yellow. Host in galls of *Biorrhiza pallida* on *Quercus* .... ***biorrhizae***(p. 278)

— Gaster long-ovate to sublanceolate, 1·75–2·50 times as long as broad, fully as long as or slightly longer than head plus thorax; if gaster nearly as short as in *biorrhizae* (some *venustus*) then body more extensively yellow-marked. Hosts on herbaceous plants 44

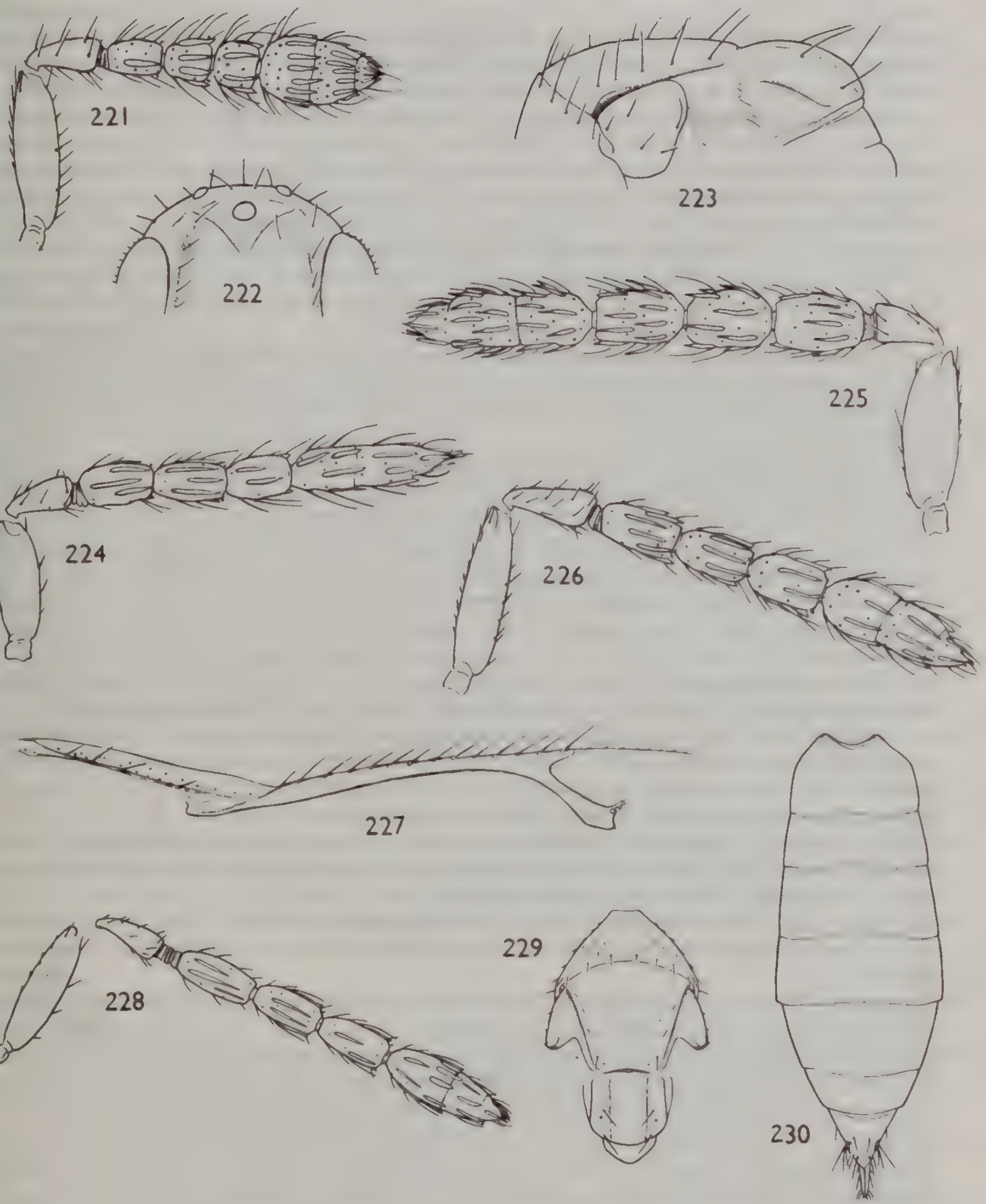
44 Head (in dried specimens) very slightly broader than mesoscutum. Spur of mid tibia 0·70–0·83 length of basitarsus. Prepectus usually black, or partly yellow, occasionally wholly yellow; yellow colour of face (when present) usually not extending laterally farther than the malar sulcus .... ***rumicis***(p. 276)

— Head (in dried specimens) not or only just as broad as mesoscutum. Spur of mid tibia 0·77–0·95 length of basitarsus. Yellow colour of face usually extending across the malar sulcus on to the lower part of the temple, the latter sometimes wholly yellow 45

45 Prepectus black, or at most slightly yellow-marked; body usually sparsely yellow-marked, in dark specimens only the face, upper angle of mesopleuron, and dorsellum, more or less pale. Gaster as long as or (usually) slightly longer than head plus thorax. Mid lobe of mesoscutum



Figs 211–220 211, 212, *Aprostocetus* (*Aprostocetus*) *bucculentus* (Kostjukov), ♀: (211) gaster; (212) antenna. 213, *A.* (*A.*) *malagensis* sp. n. ♀, antenna. 214, 215, *A.* (*A.*) *larzacensis* sp. n. ♀; (214) gaster; (215) antenna. 216, *A.* (*A.*) *aartseni* sp. n. ♀, antenna. 217 *A.* (*A.*) *levadiensis* sp. n. ♀, antenna. 218, *A.* (*A.*) *crassiceps* sp. n. ♀, antenna. 219, 220, *A.* (*A.*) *taxi* sp. n. ♀: (219) antenna; (220) forewing, anterior.



Figs 221–230 221–223, *Aprostocetus* (*Aprostocetus*) *aristaeus* (Walker) ♀: (221) antenna; (222) upper part of head; (223) thorax, profile. 224, *A.* (*A.*) *stenus* sp. n. ♀, antenna. 225, *A.* (*A.*) *laticeps* sp. n. ♀, antenna. 226, 227, *A.* (*A.*) *bakkendorfi* sp. n. ♀: (226) antenna; (227) forewing, anterior. 228–230, *A.* (*A.*) *tompanus* (Erdös) ♀: (228) antenna; (229) thorax, anterior; (230) gaster.

with 5–8 adnotaular setae on each side. Body length 1·6–2·6 mm .... ***serratularum*** (p. 274)

— Prepectus usually wholly yellow, rarely dark-marked; body usually richly yellow-marked, sometimes mainly yellow; head usually extensively, sometimes wholly, yellow. Gaster usually about as long as, or slightly shorter than, head plus thorax, occasionally a little longer. Mid lobe of mesoscutum with 3–6 adnotaular setae on each side. Body length 1·1–2·0 mm .... ***venustus*** (p. 277)

46 Spur of mid tibia (Fig. 345) very short, its length less than half that of the basitarsus and hardly as great as the breadth of the tibia. Thorax (Fig. 346) strongly arched with mesosternum short and convex; hind coxae nearly vertical; gaster lanceolate, with hypopygium normally prominent. Body black with weak bronze or olivaceous tints; face often yellowish-marked ***clavicornis*** (p. 257)

— Spur of mid tibia longer, its length *either* more than half that of the basitarsus *or*, if the latter is elongate, then distinctly greater than the breadth of the tibia. The other characters rarely all present in combination 47

47 Forewing (Fig. 247) with a large brownish to fuscous discal cloud; pilosity of wing not denser apically than just beyond the speculum. Thorax in dorsal view only slightly longer than broad; mid lobe of mesoscutum without a median line; scutellum 1·6–2·0 times as broad as long. Body non-metallic, black or black with testaceous areas .... ***capnopterus*** (p. 295)

— Forewing almost always hyaline or very weakly and uniformly infumate, rarely (*flavifrons*) yellowish discally, in which case the wing has dense pilosity, the thorax is distinctly longer than broad, mid lobe of mesoscutum has at least some trace of a median line, and the scutellum is rather less transverse 48

48 External surface of hind coxae rather dull, with relatively strong and slightly raised reticulation; propodeal callus with similar sculpture. Malar sulcus with a small and narrow triangular fovea below the eye. Antenna (Fig. 248) with scape shorter than an eye, not reaching the median ocellus; funicular segments subequal in length, each (except sometimes the first) less than twice as long as broad, oval in shape; clava acutely pointed, terminal spine long. Body black, with a very weak bluish gloss in places .... ***boreus*** (p. 288)

— External surface of hind coxae nearly always shiny, with delicate superficial or engraved reticulation; if this reticulation is very slightly raised, then the malar sulcus lacks a distinct fovea, the antennal scape is as long as an eye and reaches above the vertex, the funicular segments decrease in length and are more elongate, whilst the body is distinctly metallic....... 49

49 Antenna (Figs 253, 254): clava with a very long, at least slightly downcurved and tapering terminal spine. Body bright green to blue. Legs, including fore and sometimes mid coxae, yellow. Antennal scape mainly to wholly yellow, flagellum fulvous to testaceous. Mid lobe of mesosocutum normally without a median line, rarely with a vague one 50

— Antennal clava with a relatively shorter and less conspicuous, straight terminal spine. Body metallic or non-metallic. Legs and antennae often relatively darker. Mid lobe of mesoscutum usually with at least some trace of a median line 51

50 Antenna (Fig. 253) abnormal: third funicular segment broader than the others, subquadrate, with a dorsal finger-like projection; clava very short, without clear indication of segmentation .... ***gratus*** (p. 283)

— Antenna (Fig. 254): third funicular segment not broader than the others, longer than broad, without dorsal projection; clava long, 3-segmented .... ***apiculatus*** (p. 281)

51 Antenna (Figs 249, 250) with scape as long as an eye and reaching above level of vertex; flagellum very long and slender, first funicular segment 3·0–5·7 times, third 2·5–3·5 times, as long as broad. Forewing: speculum absent or nearly so. Body at least partly metallic........... 52

— Antenna with scape usually shorter than an eye and not reaching above level of vertex; if not then flagellum shorter and less slender, with relatively shorter funicular segments, body non-metallic. Forewing: speculum nearly always present, sometimes moderately large 53

52 Body metallic with at most the face below antennal toruli, prosternum, and base and venter of gaster, yellowish. Submedian lines of scutellum (Fig. 251) diverging only slightly caudad. Propodeum rather delicately reticulate, the sculpture hardly raised .... ***orithyia*** (p. 280)

— In addition to the pale areas noted for *orithyia*, the venter of thorax mainly to wholly, sometimes also the mesoscutum and axillae more or less, are yellowish. Submedian lines of scutellum (Fig. 252) diverging distinctly to rather strongly caudad. Middle third of propodeum with rather stronger and distinctly raised reticulation .... ***longiscapus*** (p. 281)

53 Malar sulcus expanded, just below the eye, to form a subtriangular fovea which extends 0·25–0·50 the length of the sulcus 54

— Malar sulcus normally without a fovea, rarely with a minute fovea 63

54 Body quite strongly metallic, green to blue-green. Mid lobe of mesoscutum without a median line. Anterior setae of scutellum before the middle. Antenna (Fig. 255)........ **foraminifer**(p. 285)

— Body black or partly yellowish, without or with at most obscure metallic tinge. Mid lobe of mesoscutum often with some trace of a median line. Anterior setae of scutellum usually in or behind the middle 55

55 Propodeum broadly and deeply emarginate posteriorly, medially shorter than the dorsellum. Gaster lanceolate, much longer than head plus thorax; last tergite 1·1–2·5 times as long as its basal breadth; ovipositor sheaths very distinctly exserted 56

— Propodeum neither broadly nor deeply emarginate, medially as long as or slightly longer than the dorsellum. Gaster ovate to lanceolate, from hardly longer than the thorax, to somewhat longer than head plus thorax; last tergite and ovipositor sheaths sometimes relatively shorter 59

56 Propodeal callus with 3–6 setae. Gaster 2·0–2·5 times as long as head plus thorax; last tergite 1·5–2·3 times as long as broad. Row of setae on lower surface of costal cell complete. Body black with at most mouth-edge and upper angle of mesopleuron testaceous ... **strobilanae**(p. 299)

— Propodeal callus with 2 setae. Gaster at most 1·7 times as long as head plus thorax. Row of setae on lower surface of costal cell widely broken medially. Body sometimes more extensively testaceous-marked 57

57 Antenna (Fig. 267) with funicle stout, about 1·5 times as stout as pedicellus, filiform; clava 2·3–2·7 times as long as broad. Forewing with marginal vein 4·0–4·8 times length of stigmal vein. Body black with at most mouth-edge and dorsellum pale. Tegulae black, testaceous anteriorly. Wing-venation testaceous to brown.................... **dauci**(p. 217)

— Antenna (Figs 268, 269) with funicle rather more slender, at most slightly stouter than pedicellus; clava sometimes relatively longer. Marginal vein 4·4–5·3 times length of stigmal vein. Body sometimes more extensively testaceous-marked. Tegulae yellow with hind edge usually slightly infuscate. Wing-venation yellow to light testaceous 58

58 Antenna (Fig. 268) with clava 2·9–3·3 times as long as broad, its first segment slightly longer than broad. Body black with dorsellum mainly or partly, often mouth-edge and upper angle of mesopleuron, sometimes parts of gaster, rarely also prepectus, testaceous. Length 2·5–2·8 mm. Host on *Prunus* spp.................... **grandii**(p. 218)

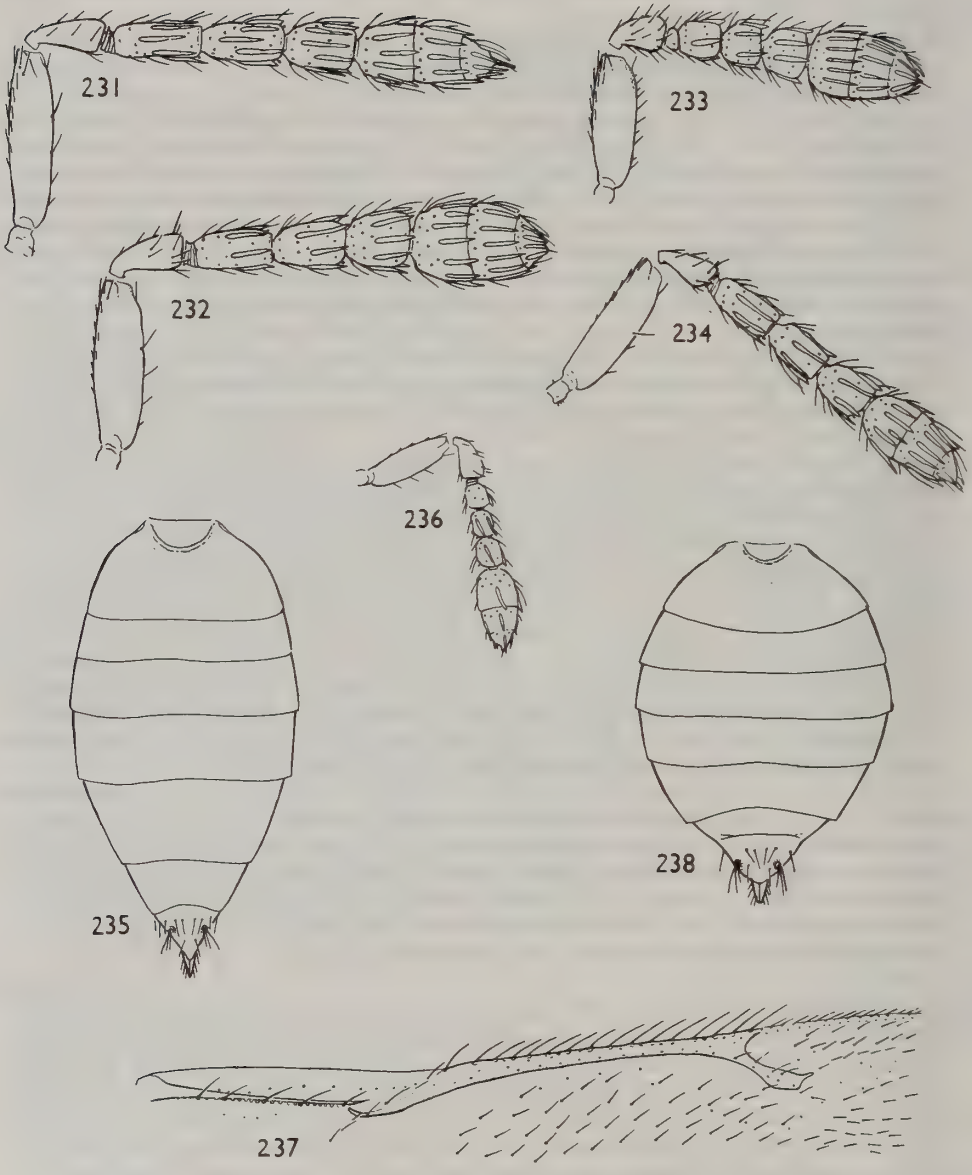
— Antenna (Fig. 269) with clava 2·45–2·70 times as long as broad, its first segment not or hardly longer than broad. Body with mouth-edge, dorsellum, prepectus, more or less, often marks at front angles of mesoscutum, and usually basal part of last tergite, testaceous; in one specimen thorax is even more extensively pale. Length 1·6–2·3 mm. Host on *Salix* spp. **deobensis**(p. 219)

59 Antenna (Fig. 257): clava with terminal spine fully half length of third claval segment; flagellum short and stout with all funicular segments quadrate, or at most the first slightly longer than broad. Gaster obtuse or subobtuse apically, hardly longer than thorax. Legs, including fore coxae at least mainly, testaceous to yellowish. Mid lobe of mesoscutum shiny, areoles of reticulation relatively short, most only slightly longer than broad, some twice as long as broad; median line absent; often more than one row of adnotaular setae on each side **xanthopus**(p. 287)

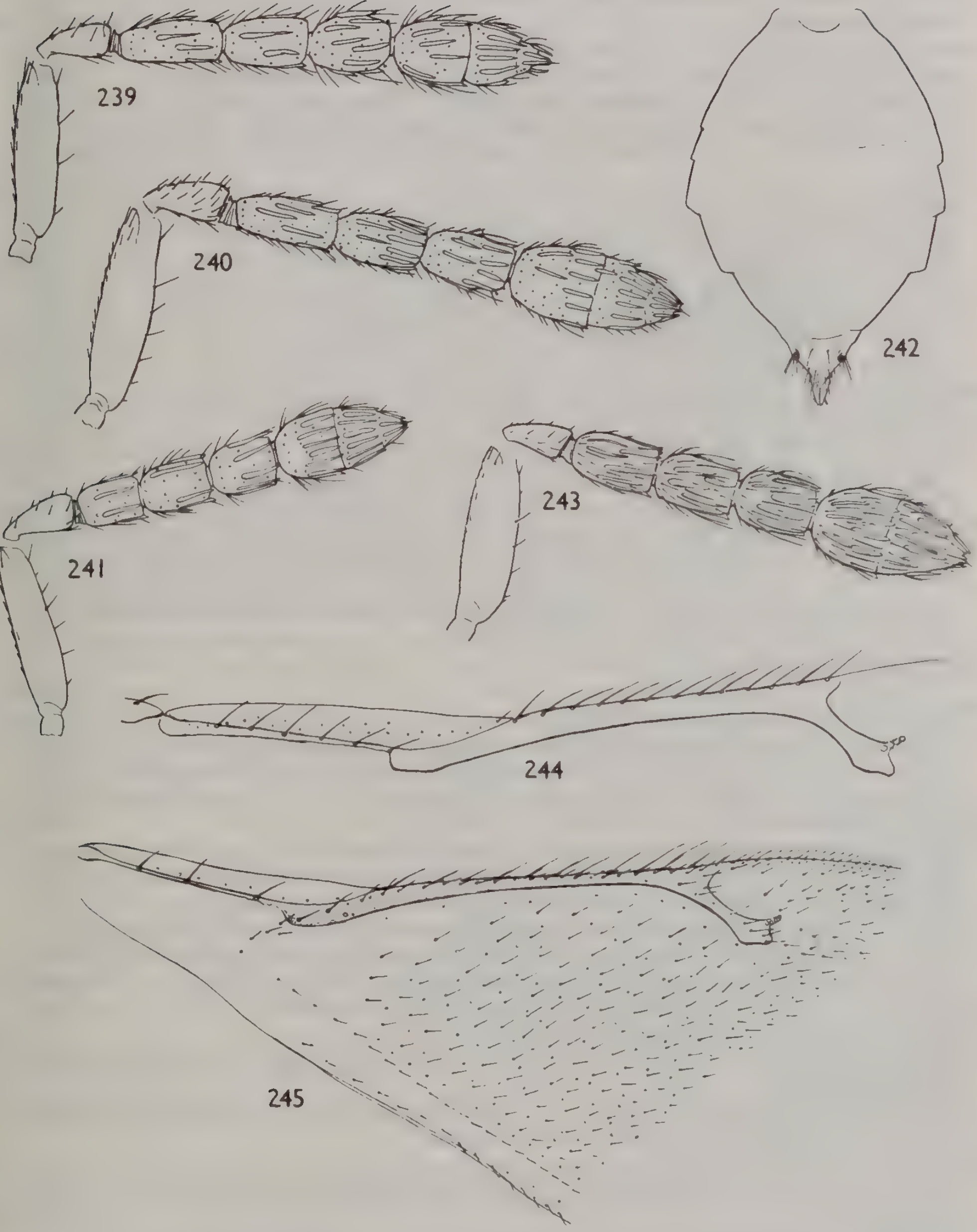
— Antenna (Figs 265, 266, 270, 351): clava with terminal spine short, at most one-third length of third claval segment, but often less; flagellum longer and more slender wtih all funicular segments usually longer than broad, rarely the third quadrate. Gaster slightly to strongly acute apically, often longer than thorax. Coxae often black, sometimes also the femora. Mid lobe of mesoscutum (except in *alveatus*) relatively dull, usually with areoles of reticulation more elongate, sometimes with a median line; with one row of adnotaular setae on each side 60

60 Mid lobe of mesoscutum without an impressed median line (an apparent line caused by a change of level of surface at this point should not be mistaken for a true line), the surface relatively dull. Head (unless collapsed) 1·2–1·4 times as broad as mesoscutum. Submedian lines of scutellum enclosing a space which is 2·3–3·5 times as long as broad; anterior setae of scutellum normally in or even a little before the middle, and about equidistant from front margin of scutellum and from posterior setae 61

— Mid lobe of mesoscutum with at least a fine impressed median line, the surface tending to be slightly shiny (especially in *alveatus*). Head not or hardly broader than mesoscutum. Submedian lines of scutellum enclosing a space which is at most about twice as long as broad. Anterior setae of scutellum tending to be slightly behind the middle and somewhat nearer to posterior setae than to front margin of scutellum 62



Figs 231–238 231, *Aprostocetus* (*Aprostocetus*) *occidentalis* sp. n. ♀, antenna. 232, *A.* (*A.*) *pausiris* (Walker) ♀, antenna. 233, *A.* (*A.*) *arrabonicus* (Erdös) ♀, antenna. 234, *A.* (*A.*) *annulatus* (Forster) ♀, antenna. 235, *A.* (*A.*) *pausiris* (Walker) ♀, gaster. 236, *A.* (*A.*) *meridionalis* sp. n. ♀, antenna. 237, *A.* (*A.*) *pausiris* (Walker) ♀, forewing, anterior. 238, *A.* (*A.*) *annulatus* (Förster) ♀, gaster.



Figs 239–245 239, *Aprostocetus* (*Aprostocetus*) *rumicis* sp. n. ♀, antenna. 240, *A.* (*A.*) *serratularum* sp. n. ♀, antenna. 241, *A.* (*A.*) *venustus* (Gahan) ♀, paratype, antenna. 242, 243, *A.* (*A.*) *biorrhizae* (Szelényi) ♀: (242) gaster; (243), antenna, holotype. 244, *A.* (*A.*) *serratularum* sp. n. ♀, forewing, anterior. 245, *A.* (*A.*) *venustus* (Gahan) ♀, forewing, holotype.

61 Gaster (Fig. 263) 1·25–1·70 times as long as broad, not or hardly acuminate, from about as long as thorax to nearly as long as head plus thorax; last tergite triangular, shorter than or almost as long as its basal breadth, with short postcercale; ovipositor sheaths at most slightly exserted. Submedian lines of scutellum enclosing a space 3·0–3·5 times as long as broad. Body black; gaster sometimes more or less testaceous to yellow proximally, dorsellum occasionally yellow .... ***aurantiacus***(p. 215)

— Gaster (Fig. 264) including ovipositor sheaths, 2·0–2·6 times as long as broad, slightly acuminate, distinctly longer than head plus thorax; last tergite longer than its basal breadth, with long sublinear postcercale; ovipositor sheaths plus postcercale 0·40–0·85 length of hind tibia. Submedian lines of scutellum enclosing a space which is usually less than 3 times as long as broad. Body black, or with head, thorax and gaster more or less marked with reddish or tan .... ***eurytomae***(p. 214)

62 Antenna (Fig. 270) with first segment of clava occupying about half the total length; funicular segments subequal in length, or decreasing very slightly. Propodeal callus with 3–5 setae. Body black, non-metallic or with a scarcely perceptible bluish tinge in places .... ***lacunatus***(p. 216)

— Antenna (Fig. 351) with first segment of clava occupying about one-third the total length; funicular segments decreasing in length distad. Propodeal callus normally with 2 setae, rarely 3. Body with at least a weak bluish, bronze or greenish metallic tinge; head normally more or less yellow-marked .... ***alveatus***(p. 323)

63 Forewing densely pilose, speculum very small or nearly absent; subcubital line of setae extending almost to level of basal vein (see Fig. 163). Body squat, black with bright metallic tints. Antenna (Fig. 167) with flagellum short, funicular segments at most slightly longer than broad. Median line of mesoscutum usually absent, occasionally indicated but very weak. Length 1·0–1·2 mm .... (***cebennicus*** in subgen. ***CHRYSOTETRASTICHUS***)(p. 129)

— Forewing either not densely pilose, or with speculum larger and subcubital line of setae extending basad at most to level of distal edge of speculum. Body metallic or non-metallic, sometimes pale-marked, often more slender. Antenna often with longer flagellum or funicular segments. Mid lobe of mesoscutum most often with some trace of median line, which is sometimes quite distinct. Size often greater 64

64 Propodeal spiracles (Fig. 284) very large.
Body black with metallic tints .... ***lysippe***(p. 226)

— Propodeal spiracles moderate-sized to small 65

65 Body almost entirely yellow, legs and antennal scape yellow. Ovipositor sheaths far exserted, sheaths plus postcercale 1·00–1·35 times length of hind tibia; ovipositor sheaths 3·1–3·6 times as long as postcercale. Antenna (Fig. 287) with clava about 3 times as long as broad. Tip of hypopygium situated very distinctly beyond the middle of the gaster .... ***flavus***(p. 235)

— When body is almost entirely yellow then the ovipositor sheaths are rarely so far exserted, but if they are then the antennal clava is at most about 2·5 times as long as broad, whilst the tip of the hypopygium is situated at most slightly beyond the middle of the gaster 66

66 Gaster (Fig. 283) lanceolate, with tip of hypopygium situated very distinctly beyond the middle. Antenna (Fig. 281) with flagellum slender, proximally not stouter than the pedicellus; all funicular segments longer than broad. Body black with metallic tints ***cultratus***(p. 227)

— Gaster *either* with tip of hypopygium not situated beyond the middle; *or* else the gaster is of different shape and the antennal features differ from the above 67

67 Breadth of mouth opening 2–3 times the malar space; mandibles (Fig. 289) large. Body black with metallic tints 68

— Breadth of mouth opening at most about 1·5 times the malar space; mandibles smaller. Body with or without metallic tints, sometimes pale-marked 69

68 Breadth of mouth 2·5–3·0 times the malar space. Antenna (Fig. 286) with flagellum slightly stouter, funicular segments shorter. Forewing (Fig. 288) with marginal and stigmal veins notably thick .... ***hians***(p. 227)

— Breadth of mouth about twice the malar space. Antenna (Fig. 292) with flagellum slightly more slender, funicular segments longer. Forewing (Fig. 290) with venation relatively thinner ***eurystoma***(p. 226)

69 Body extensively to almost wholly yellowish, testaceous, or reddish 70

— Body either not pale-marked, or with pale markings of at most moderate extent 71

70 Antenna (Fig. 343) with scape slightly longer than an eye and reaching slightly above vertex; pedicellus about 3 times as long as broad. Gena with some long white outstanding setae, the longest placed a little mesad of the malar sulcus at about the middle of its length. Mid lobe of

mesoscutum without a median line, rather dull, its reticulation very slightly raised and composed of short areoles (at most about twice as long as broad). POL hardly greater than OOL .... **phillyreae**(p. 256)

— Antenna different in form. Gena without long white outstanding setae. Mid lobe of mesoscutum dull or shiny, with short or elongate areoles. POL most often greater than OOL 71

71 Mid lobe of mesoscutum in most species with stronger, at least very slightly raised reticulation (Figs 275–277) and relatively dull. Propodeum medially nearly always broadly and deeply emarginate, so as to be at least slightly shorter than the dorsellum. Anterior setae of scutellum most often in the middle of its length, occasionally slightly behind the middle. (Aberrant and weakly developed individuals of some species may offer difficulty and should be tried in both sections of the key) 72

— *Either* mid lobe of mesoscutum has excessively fine and delicate, lightly engraved or superficial reticulation (Figs 278–280) *or* the propodeum medially is as long as the dorsellum, more narrowly and less deeply emarginate. Anterior setae of scutellum usually behind the middle 122

72 Thorax squat, about 1·2 times as long as broad. Propodeal callus with 3–5 setae. Body wholly black, non-metallic except the bronze gaster. Propodeum medially slightly shorter than dorsellum. Forewing (Fig. 272) with marginal vein rather thick, not longer than costal cell; stigmal vein rather thick, stigma fairly large. Mid lobe of mesoscutum rather dull, its reticulation very slightly raised, with most areoles 2–3 times as long as broad. Setae of body, including those of propodeal callus, blackish. Tarsal claws with a basal tooth or lobe (Fig. 273) .... **cycladum**(p. 221)

— Thorax nearly always at least 1·4 times as long as broad, if less than propodeal callus with 2 setae and/or body at least slightly metallic. Body sometimes pale-marked. Propodeum medially often as long as dorsellum. Forewing most often with marginal vein thinner and longer than costal cell, stigma smaller. Mid lobe of mesoscutum in wholly black, non-metallic species usually shiny with delicately engraved reticulation having longer areoles. Setae of body often paler 73

73 Propodeal callus with 4–11 setae. Body usually without pale markings, occasionally (*occidentalis*) with mouth-edge testaceous 74

— Propodeal callus in most species with 2 setae, rarely with 3. Body sometimes extensively pale-marked 77

74 Submedian lines of scutellum enclose a space 2·1–2·3 times as long as broad. Forewing with marginal vein 4·5–5·0 times length of stigmal vein. Body with strong green to blue or bronze-green metallic tints. Mid lobe of mesoscutum with distinct median line. Thorax 1·6–1·7 times as long as broad. Antenna (Fig. 231): clava with prominent terminal spine **occidentalis**(p. 266)

— Submedian lines of scutellum enclose a space 2·5–3·0 times as long as broad. *Either* the marginal vein is at most 3·6 times length of stigmal, body with less strong bluish tint, and antennal clava with inconspicuous terminal spine; *or* body has at most a weak bluish tinge on dorsum of thorax and sometimes on the head, the median line of the mesoscutum is absent or indicated only near the scutellum, and the thorax is only 1·4–1·5 times as long as broad........ 75

75 Marginal vein of forewing 4·0–4·6 times length of stigmal vein. Propodeal callus with (3–) 4 setae .... **neglectus**(p. 292)

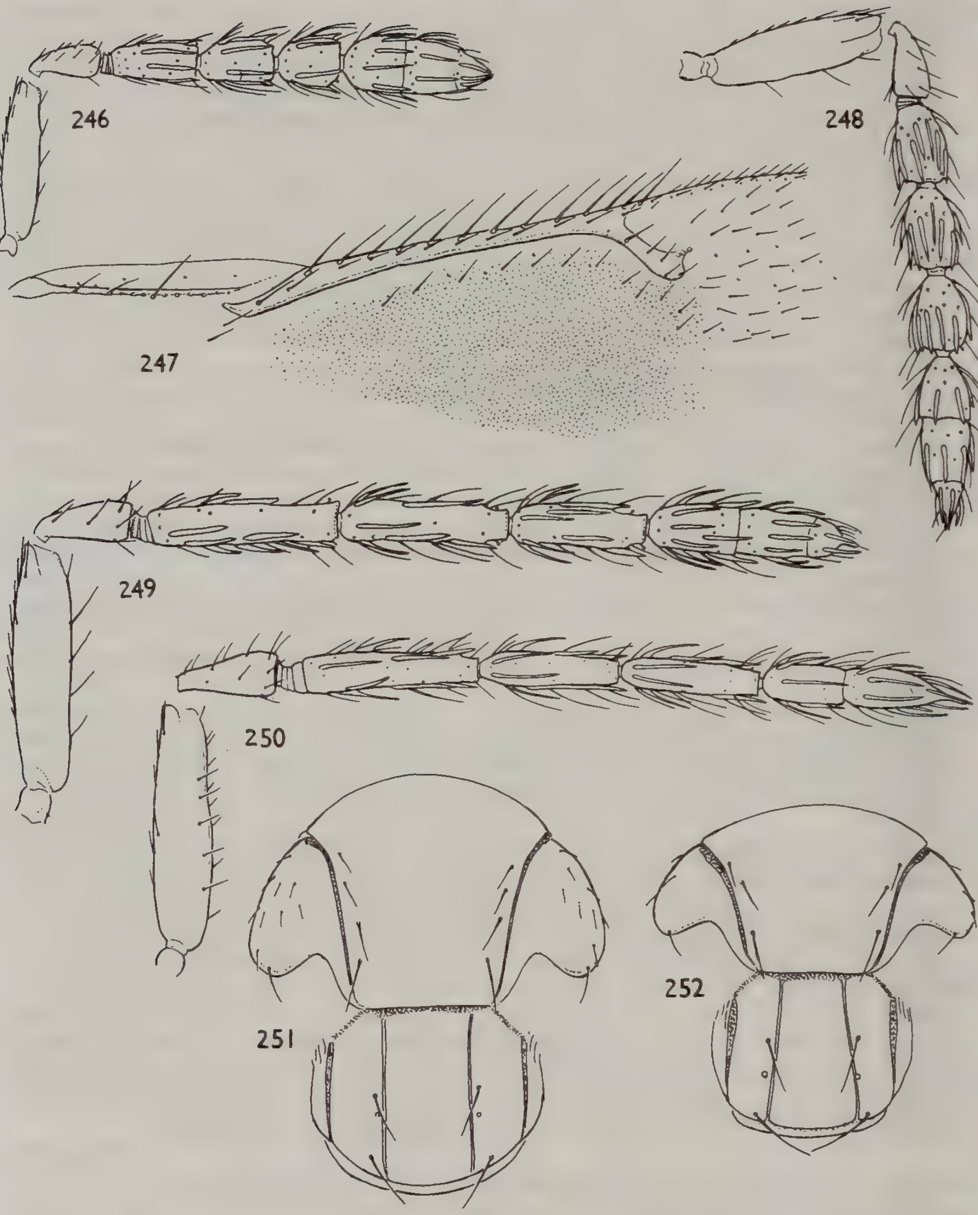
— Marginal vein of forewing 2·75–3·60 times length of stigmal. Propodeal callus with 4–11 setae 76

76 Mid lobe of mesoscutum without median line. Propodeal callus with 5–11 setae. Body black; dorsum of thorax and head occasionally with a very weak bluish tinge. Forewing (Fig. 261) with marginal vein thick, especially in larger specimens such as the one figured **pachyneuros**(p. 291)

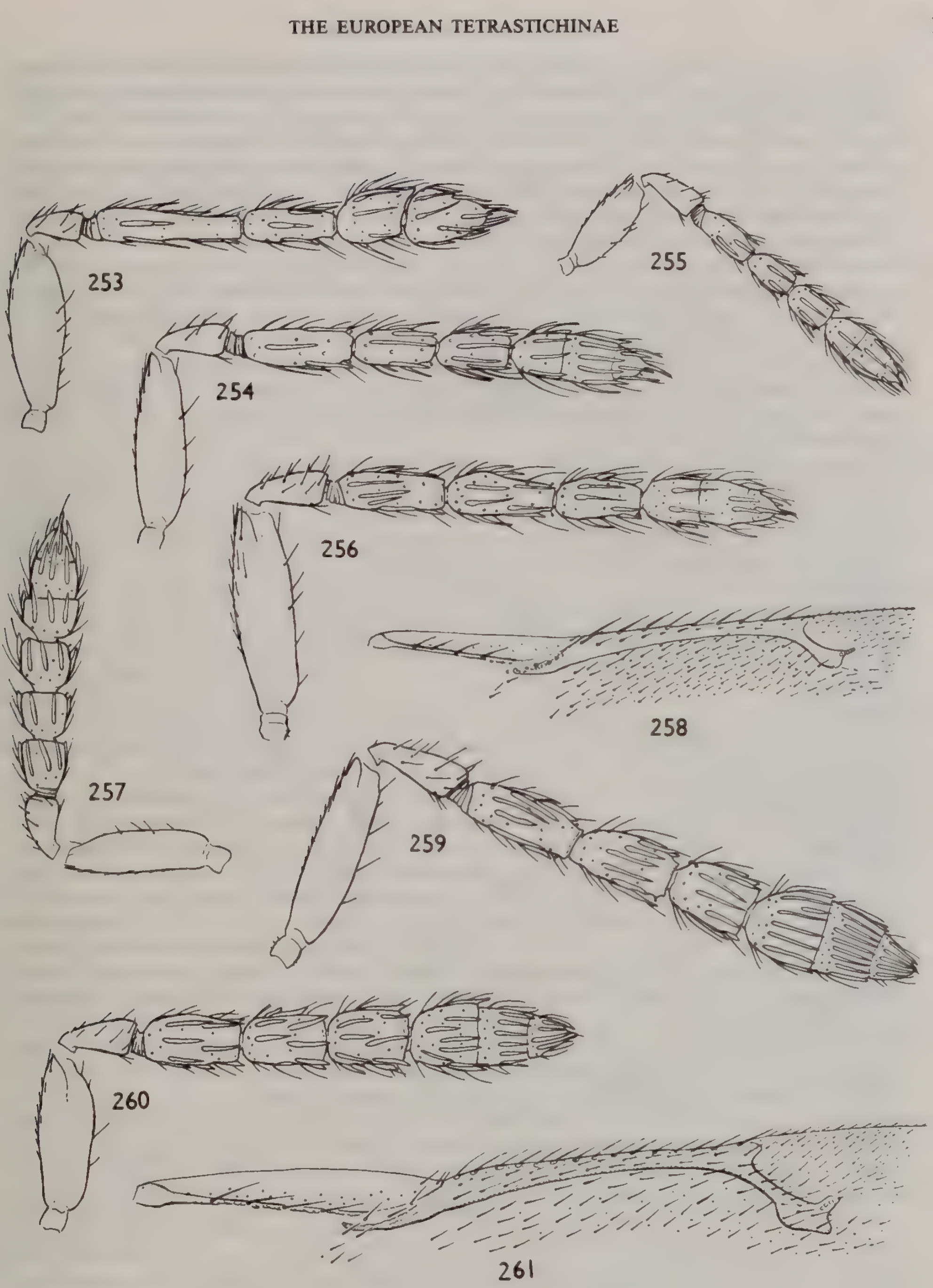
— Mid lobe of mesoscutum with median line present on about posterior two-thirds. Propodeal callus with 4 setae. Head, thorax and gaster with rather distinct bluish tint. Forewing with marginal vein relatively thinner .... **coccidiphagus**(p. 352)

77 Propodeal callus with 3 setae. Gaster (Fig. 348) subcircular to ovate, at most as long as head plus thorax, its apex forming an angle of about 90° or more. Submedian lines of scutellum hardly nearer to sublateral lines than to each other, enclosing a space at least 2·5 times as long as broad. Body black, usually with weak bluish tinge .... **neglectus**(p. 292)

— Propodeal callus nearly always with 2 setae; rarely 3, in which case the gaster is lanceolate and distinctly to much longer than head plus thorax, with its apex acute. Submedian lines of scutellum sometimes distinctly nearer to sublateral lines than to each other, or enclosing a space which is less elongate. Body sometimes pale-marked........ 78



Figs 246–252 246, 247, *Aprostocetus* (*Aprostocetus*) *capnopterus* sp. n. ♀: (246) antenna; (247) forewing, anterior. 248, *A.* (*A.*) *boreus* (Delucchi) ♀, antenna. 249, *A.* (*A.*) *longiscapus* (Thomson) ♀, antenna. 250, 251, *A.* (*A.*) *orithyia* (Walker) ♀: (250) antenna; (251) mesoscutum and scutellum. 252, *A.* (*A.*) *longiscapus* (Thomson) ♀, mesoscutum and scutellum.



Figs 253–261 253, *Aprostocetus* (*Aprostocetus*) *gratus* (Giraud) ♀, antenna. 254, *A.* (*A.*) *apiculatus* sp. n. ♀, antenna. 255, *A.* (*A.*) *foraminifer* sp. n. ♀, antenna. 256, *A.* (*A.*) *phragmiticola* sp. n. ♀, antenna. 257, 258, *A.* (*A.*) *xanthopus* (Nees) ♀ (syntype of *pallipes* Hartig): (257) antenna; (258) forewing, anterior. 259, *A.* (*A.*) *strobilanae* (Ratzeburg) ♀, antenna. 260, 261, *A.* (*A.*) *pachyneuros* (Ratzeburg) ♀: (260) antenna; (261) forewing, anterior.

78 Body non-metallic, either wholly black, or with yellowish, testaceous or reddish markings of small to moderate extent. Mesoscutum in most species shiny, with excessively fine and delicately engraved reticulation 122

— At least part of dorsum of thorax, and head, with weak metallic tints, often these parts more strongly metallic, usually also other areas of thorax, and often the gaster (when the body has rather extensive pale areas, the metallic tints tend to be weak). Mesoscutum in most species relatively less shiny, the reticulation tending to be stronger and usually superficial or more sharply engraved, occasionally slightly raised 79

79 Gaster (Figs 302, 304): postcercale tapering, very distinctly longer than longest cercal seta; ovipositor sheaths plus postcercale 1·35–2·00 times length of hind tibia. Longest cercal seta fully twice the length of the next longest, sinuate or kinked in its middle. Body with at most mouth-edge, upper angle of mesopleuron, and dorsellum, pale 80

— Gaster (Figs 301, 303, 314–316, 325, 330, 333, 337, 340): *either* postcercale is not longer than longest cercal seta; *or* ovipositor sheaths plus postcercale at most 1·1 times length of hind tibia; *or* longest cercal seta is less than twice the length of the next longest, and the body is more extensively yellow-marked 81

80 Ovipositor sheaths plus postcercale (Fig. 302) 1·8–2·0 times length of hind tibia; postcercale about 0·33 length of exserted part of ovipositor sheaths (rare aberrations with shorter sheaths occur, but are usually slightly distorted) .... ***leucone*** (p. 239)

— Ovipositor sheaths plus postcercale 1·35–1·50 times length of hind tibia; postcercale subequal in length to exserted part of ovipositor sheaths (Fig. 304) .... ***verutus*** (p. 240)

81 Ovipositor sheaths plus postcercale (Fig. 303) 1·8–2·0 times length of hind tibia; postcercale slightly shorter than or as long as longest cercal seta, the latter twice the length of the next longest. Very small, length including ovipositor 1·60–1·85 mm. Body obscurely testaceous to fuscous, with very weak olivaceous tinge on head and thorax (hardly perceptible in paler specimens) .... ***terebrans*** (p. 238)

— Ovipositor sheaths plus postcercale at most 1·6 times length of hind tibia, but if as much as this then longest seta of each cercus only about 1·5 length of next longest, body either black with strong metallic tints, or partly to mainly yellow. Size often relatively greater 82

82 Exserted portion of ovipositor sheaths (Fig. 301) 6–8 times as long as postcercale, the latter usually slightly shorter than the longest cercal seta, which is about 1·6 times the length of the next longest; ovipositor sheaths plus postcercale 1·3–1·6 times length of hind tibia. Body black with green to blue metallic tints, not pale-marked except sometimes mouth-edge, upper angle of mesopleuron, and dorsellum; tegulae mainly to wholly yellow, tibiae usually yellow, occasionally slightly darkened medially .... ***longicauda*** (p. 240)

— Exserted portion of ovipositor sheaths at most 5 times as long as postcercale in one species which has body extensively yellow-marked; in other species at most 4 times as long as postcercale and at most hardly longer than hind tibia. Longest seta of each cercus often twice length of next longest 83

83 Exserted portion of ovipositor sheaths (Fig. 317) 2·3–5·0 times as long as postcercale; both together 0·6–1·5 times length of hind tibia; longest seta of each cercus less than twice the length of the next longest. Body usually extensively yellow-marked 84

— Exserted portion of ovipositor sheaths (Figs 299, 314–316, 325, 330, 333, 337, 340) at most slightly longer than postcercale but often shorter; longest seta of each cercus often about twice the length of the next longest. Body with or without extensive yellow markings 86

84 Antenna (Fig. 308) with combined length of pedicellus and flagellum 1·15–1·35 breadth of mesoscutum; third funicular segment (?1·2–) 1·4–1·6 times as long as broad. Exserted portion of ovipositor sheaths 2·3–3·0 times length of postcercale .... ***fonscolombei*** (p. 224)

— Antenna with combined length of pedicellus and flagellum not greater than breadth of mesoscutum; third funicular segment not or hardly longer than broad. Exserted portion of ovipositor sheaths 2·3–5·0 times length of postcercale 85

85 All setae of thoracic dorsum pale. Gaster with tip of hypopygium situated at approximately half its length .... ***productus*** (p. 225)

— Setae of pronotum, mesoscutum, and scutellum all black, or at most the anterior adnotaular setae pale. Gaster with tip of hypopygium situated at 0·65–0·67 length of gaster ***extensus*** (p. 225)

86 Ovipositor sheaths plus postcercale 0·55–1·10 times length of hind tibia; sheaths from a little longer to slightly shorter than the postcercale. Gaster including ovipositor sheaths from virtually twice, to more than twice, as long as thorax. Antenna with third funicular segment 1·0–1·5 times as long as broad, first funicular segment as long as or shorter than pedicellus

and 1·0–1·8 times as long as broad 87

— *Either* ovipositor sheaths plus postcercale less than 0·5 length of hind tibia; *or* ovipositor sheaths distinctly shorter than postcercale; *or* third funicular segment 1·7–2·5 times as long as broad; *or* first funicular segment slightly longer than the pedicellus. Gaster including ovipositor sheaths often less than twice as long as thorax 91

87 Longest seta of each cercus about 1·5 times length of next longest. Mid lobe of mesoscutum (Fig. 275) with reticulation at least very slightly raised, tending to be wide-meshed, its areoles at most about twice as long as broad, at least in hind half of the sclerite; surface rather dull .... ***epicharmus***(p. 222)

— Longest seta of each cercus about twice length of next longest. Mid lobe of mesoscutum (see Fig. 276) with reticulation superficial, usually finer, its areoles mostly about 3 times as long as broad; surface sometimes rather more shiny. Body dark with at most mouth edge, upper angle of mesopleuron, dorsellum, and scapular flanges testaceous 88

88 Antenna (Fig. 336) with first funicular segment as long as or slightly longer than the pedicellus. Ovipositor sheaths plus postcercale 0·60–0·65 length of hind tibia. Very small, length 1·2–1·4 mm, associated with host on *Salix* .... ***minimus***(p. 247)

— *Either* antennae (Figs 297, 298) with first funicular segment at least slightly shorter than pedicellus; *or* ovipositor sheaths plus postcercale 0·7–1·1 times length of hind tibia. Species probably associated with hosts on grasses 89

89 Antenna (Fig. 298) with first funicular segment slightly shorter than second and from slightly transverse to very slightly longer than broad. Smaller, length 0·9–1·1 mm. Mid lobe of mesoscutum with 2 adnotaular setae on each side .... ***ciliatus***(p. 238)

— Antenna (Fig. 297) with first funicular segment as long as or hardly shorter than second and at least slightly longer than broad (varying up to 1·5 times as long as broad). Larger, length 1·0–2·1 mm. Mid lobe of mesoscutum with (2–) 3–4 adnotaular setae on each side 90

90 Ovipositor sheaths plus postcercale 0·66–1·10 length of hind tibia .... ***caudatus***(p. 236)

— Ovipositor sheaths plus postcercale 0·4–0·6 length of hind tibia .... ***rhipheus***(p. 243)

91 Species with following combination of characters: very small, length 0·7–0·9 mm; antenna (Fig. 313) with first segment of clava occupying approximately half the total length, first funicular segment slightly shorter than pedicellus; submarginal vein of forewing usually with 2, occasionally 3, dorsal setae; body more or less yellow-marked; hindwing (Fig. 312) strongly acute .... ***gnomus***(p. 231)

— Species *either* larger; *or* with first segment of antennal clava occupying distinctly less than half the total length; *or* with first funicular segment at least as long as the pedicellus. Forewing usually with 3 or more dorsal setae, rarely 2. Body often without yellow markings. Hindwing usually less strongly acute, sometimes obtuse 92

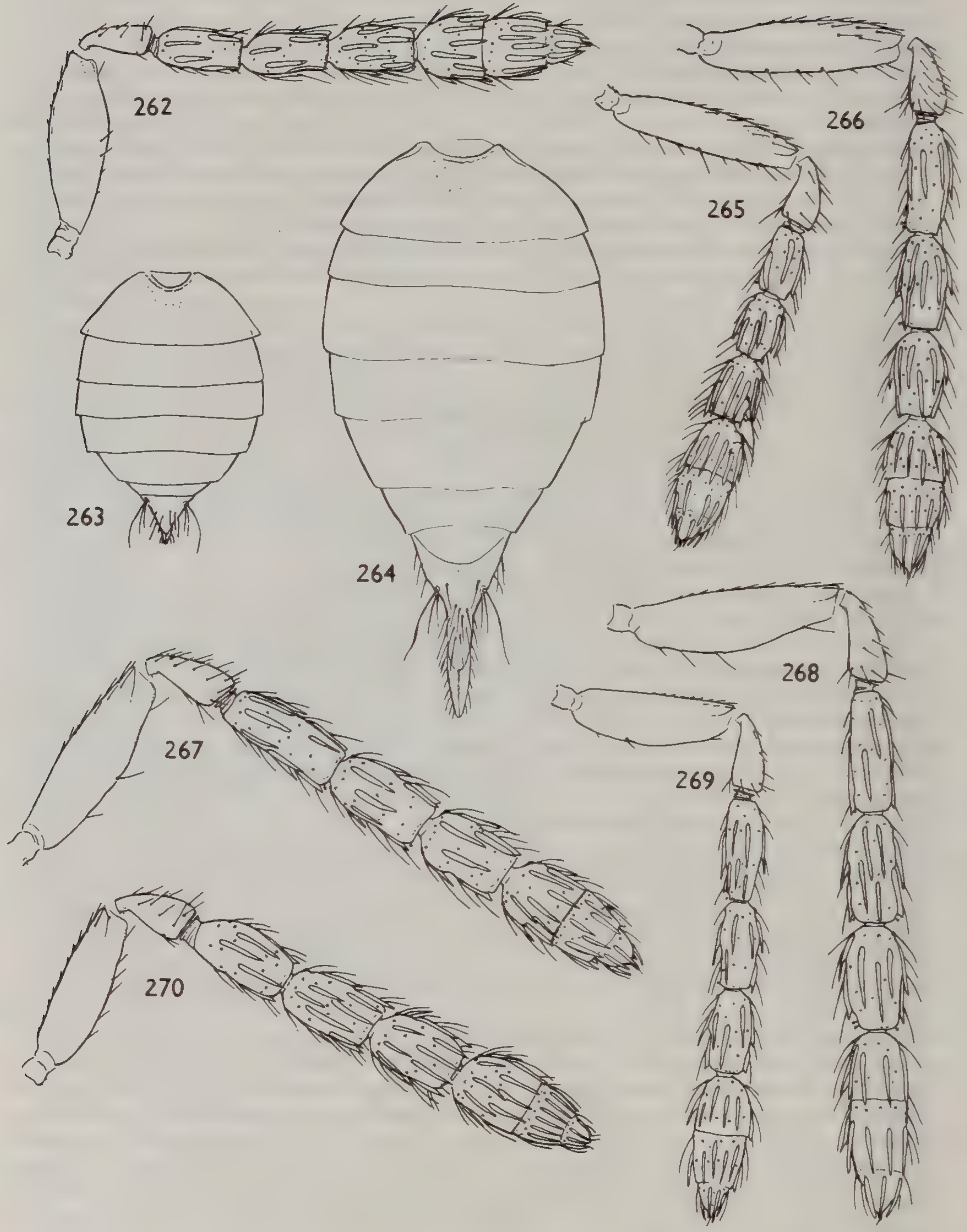
92 Species with following combination of characters: hindwing acutely pointed; propodeum medially distinctly shorter than dorsellum, the latter about twice as broad as long with its hind margin obtusely angulate; slender species with thorax 1·60–1·65 times as long as broad, mid lobe of mesoscutum with distinct median line, not very shiny; gaster lanceolate, 3·0–4·0 (–5·7) times as long as broad; antenna (Fig. 318) with clava obtuse but having a prominent terminal spine which is nearly or about as long as the third claval segment; body black, with weak olivaceous or bluish tinge .... ***grylii***(p. 289)

— Not with the above combination of characters. Hindwing usually less acute, sometimes obtuse. Propodeum sometimes as long as dorsellum. Body sometimes less slender, or with shorter gaster. If the antennal clava has a prominent terminal spine, then it is often pointed or acute apically. Body sometimes strongly metallic, or extensively yellow-marked 93

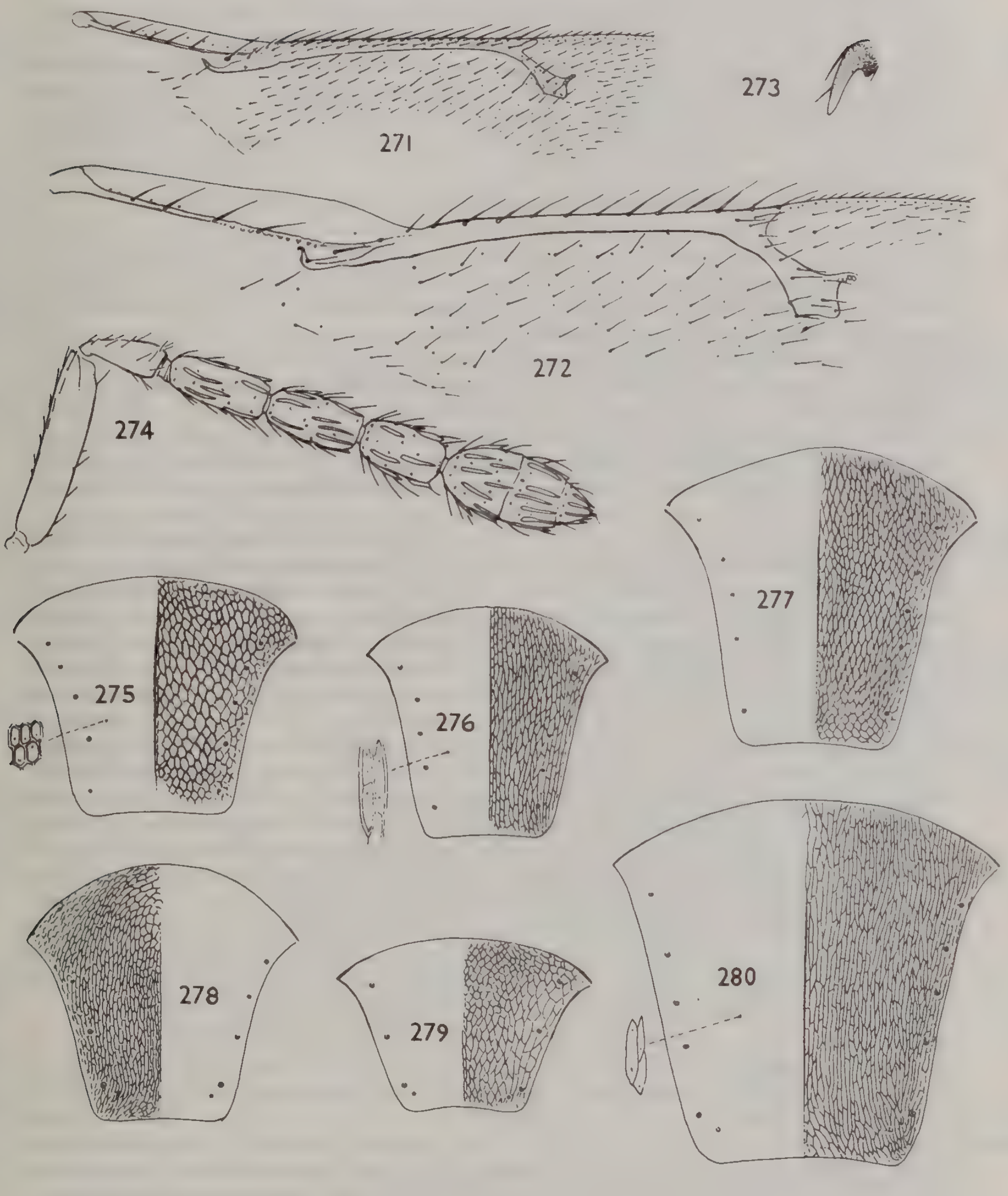
93 Scutellum in profile (Fig. 379) weakly convex; anterior setae of scutellum slightly shorter than posterior setae, their length only about 0·5 the distance separating the submedian lines, and placed in or hardly behind the middle. Body black, sometimes with weak bronze tinge, sometimes partly testaceous. Mid lobe of mesoscutum with excessively fine and delicately engraved, sometimes almost obsolescent, reticulation 135

— Scutellum in profile moderately to strongly convex; anterior setae most often as long as posterior setae, often placed behind the middle. Body sometimes strongly metallic. Mid lobe of mesoscutum often with relatively stronger reticulation 94

94 Mid lobe of mesoscutum and scutellum conspicuously shiny, with excessively fine and delicately-engraved or almost obsolescent reticulation. Anterior setae of scutellum most often slightly to well behind the middle, and usually at least twice as far from front edge of scutellum as from posterior setae. Ventral edge of scape, above the middle, normally with at



Figs 262–270 262, *Aprostocetus* (*Aprostocetus*) *asperulus* (Graham) ♀, antenna. 263, *A.* (*A.*) *aurantiacus* (Ratzeburg) ♀, gaster. 264, *A.* (*A.*) *eurytomae* (Nees) ♀, gaster. 265, *A.* (*A.*) *aurantiacus* (Ratzeburg) ♀, antenna. 266, *A.* (*A.*) *eurytomae* (Nees) ♀, antenna. 267, *A.* (*A.*) *dauci* sp. n. ♀, antenna. 268, *A.* (*A.*) *grandii* (Domenichini) ♀, antenna. 269, *A.* (*A.*) *deobensis* sp. n. ♀, antenna. 270, *A.* (*A.*) *lacunatus* sp. n. ♀, antenna.



Figs 271–280 271, *Aprostocetus* (*Aprostocetus*) *aurantiacus* (Ratzeburg) ♀, forewing, anterior. 272–274, *A.* (*A.*) *cycladum* sp. n. ♀: (272) forewing, anterior; (273) claw of mid tarsus; (274) antenna. 275, *A.* (*A.*) *epicharmus* (Walker) ♀, mesoscutum, sculpture shown on one half. 276, *A.* (*A.*) *caudatus* Westwood ♀, mesoscutum, sculpture. 277, *A.* (*A.*) *fabicola* (Rondani) ♀, mesoscutum, sculpture. 278, *A.* (*A.*) *escherichi* (Szelényi) ♀, mesoscutum, sculpture. 279, *A.* (*A.*) *fulvipes* (Förster) ♀, mesoscutum, sculpture. 280, *A.* (*A.*) *lycidas* (Walker) ♀, mesoscutum, sculpture.

least one seta in addition to the subapical seta 122

— Mid lobe of mesoscutum, and often the scutellum, moderately shiny to rather dull, their reticulation relatively less fine, superficial or (on mesoscutum) sometimes slightly raised. Anterior setae of scutellum most often about in the middle and less then twice as far from front edge of scutellum than from posterior setae. Ventral edge of scape, above the middle, usually with subapical seta only (if with extra setae, then mesoscutum dull) 95

95 Tegulae black or fuscous. Head and thorax rather obscurely metallic, bluish or olivaceous (occasionally with hardly perceptible metallic tinge), immaculate or with at most upper angle of mesopleuron, dorsellum, and mouth-edge pale; mid and hind tibiae broadly infuscate to mainly black. Antenna with combined length of pedicellus and flagellum slightly greater than breadth of mesoscutum; third funicular segment at most 1·7 times as long as broad; clava 2·3–2·6 times as long as broad, not or only slightly longer than funicular segments two plus three 96

— Tegulae nearly always testaceous or yellow at least anteriorly, sometimes wholly so; rarely brownish, in which case head and thorax are more strongly metallic, mid and hind tibiae are usually yellowish, whilst the third funicular segment and the clava are sometimes relatively longer. Body sometimes extensively yellow-marked 98

96 Mid lobe of mesoscutum slightly broader than long, with very distinct median line. Antenna (Fig. 319) with first funicular segment very slightly longer than the pedicellus and 2·00–2·45 times as long as broad. Hindwing obtuse. Body-length (1·3–) 1·8–2·4 mm ..... ***craneiobiae*** (p. 241)

— Mid lobe of mesoscutum not or hardly broader than long, its median line very fine or obsolescent. Antenna (Fig. 320) with first funicular segment usually somewhat shorter than, occasionally as long as, the pedicellus. Hindwing slightly pointed or acute. Body-length 1·20–1·75 mm 97

97 Forewing (Fig. 324) with marginal vein 2·8–3·5 (–3·7) times length of stigmal vein, the latter forming an angle of 40°–45° with costal edge of wing. Propodeum medially as long as, or only very slightly shorter than, the dorsellum. Gaster 1·5–1·6 times as long as thorax; last tergite from slightly shorter than, to very slightly longer than broad .... ***meroe*** (p. 242)

— Forewing (Fig. 323) with marginal vein (3·5–) 3·7–4·4 times length of stigmal vein, the latter forming an angle of about 50° with costal edge of wing. Propodeum medially 0.5–0·7 as long as dorsellum. Gaster 1·75–2·00 times as long as thorax; last tergite 1·15–1·57 times as long as its basal breadth .... ***rhipheus*** (p. 243)

98 Antenna (Figs 309–311) with clava short, 1·8–2·3 times as long as broad, obtuse, its terminal spine only about 0·3 length of the third claval segment and not very slender; first funicular segment not longer, and sometimes shorter, than the pedicellus. Mid lobe of mesoscutum (Fig. 275) with reticulation at least very slightly raised, its areoles, at least in the hind half of the sclerite, only 1·5–3·0 times as long as broad; median line distinct, often strong. Longest seta of each cercus about 1·5 times length of next longest. Body, especially in southern specimens, often yellow-marked, sometimes extensively so 99

— Antennal clava usually longer, often acute, terminal spine nearly always longer relative to third claval segment and more slender; if not, then *either* first funicular segment longer than pedicellus, *or* mid lobe of mesoscutum with superficial reticulation composed of relatively longer areoles, *or* longest seta of each cercus more than 1·5 times length of next longest 100

99 Ovipositor sheaths plus postcercale 0·45–0·70 length of hind tibia; gaster (Fig. 314) 2·5–4·8 times as long as broad .... ***epicharmus*** (p. 222)

— Ovipositor sheaths plus postcercale 0·1–0·4 length of hind tibia; gaster (Figs 315, 316) 1·4–2·7 times as long as broad .... ***agrus*** (p. 223)

100 Antenna (Fig. 329) with clava 3·4–3·7 times as long as broad. Gaster 2.7–3.5 times as long as broad. Mesoscutum rather dull, its reticulation very slightly raised, areoles at least in hind half of sclerite mostly about twice as long as broad (see Fig. 277); median line usually distinct, sometimes strong. Scutellum with submedian lines slightly to distinctly nearer to sublateral lines than to each other, enclosing a space 1.7–2.0 times as long as broad. Body often extensively yellow-marked .... ***fabicola*** (p. 228)

— Usually the antennal clava, or the gaster, relatively shorter than in *fabicola*, if not then mesoscutum moderately shiny, its reticulation superficial or engraved, areoles relatively longer, median line weaker 101

101 Gaster (Fig. 333) 3·00–3·75 times as long as broad. Mesoscutum rather dull, its reticulation superficial or very slightly raised, its areoles at least in hind half of sclerite mostly about twice as long as broad. Scutellum with submedian lines hardly nearer to sublateral lines than to

each other, enclosing a space 2·2–2·5 times as long as broad. Body sometimes extensively yellow-marked .... ***lachares***(p. 229)

— *Either* the gaster is relatively shorter; *or* the mesoscutum is rather more shiny, with engraved reticulation, areoles mostly more elongate, median line often very fine or weak. Scutellum with submedian lines most often nearer to sublateral lines than to each other. Body sometimes without yellow markings 102

102 Antennal clava (Figs 293, 296) with a very slender terminal spine which is 0·5–0·9 length of third claval segment. Propodeum (Fig. 294) not very broadly emarginate posteriorly, sometimes as long as the dorsellum though usually slightly shorter. Submedian lines of scutellum about equidistant from each other and from sublateral lines, or a little nearer to the latter 103

— Antennal clava with terminal spine rarely approaching the above in length, but if so then either the thorax is only 1·25–1·35 times as long as broad, or the other characters differ. Propodeum most often very broadly, as well as deeply, emarginate posteriorly, as in Fig. 295. Submedian lines of scutellum often distinctly nearer to sublateral lines than to each other 104

103 Antenna (Fig. 296) with third funicular segment 1·2–1·6 times as long as broad, first at most 2·3 times as long as broad; clava 2·1–2·6 times as long as broad with terminal spine nearly as long as third claval segment. Submedian lines of scutellum enclosing a space 2·0–2·8 times as long as broad. Body sometimes extensively marked with reddish and/or yellow; dorsellum nearly always yellow at sides or wholly so .... ***menius***(p. 234)

— Antenna (Fig. 293) with third funicular segment 1·8–2·2 times as long as broad, first 1·8–3·8 times as long as broad; clava 2·6–4·3 times as long as broad with terminal spine 0·5–0·7 length of third claval segment. Submedian lines of scutellum enclosing a space 1·9–2·1 times as long as broad. Body not pale-marked, except sometimes upper angle of mesopleuron, mouth-edge, and sides of dorsellum .... ***zosimus***(p. 232)

104 Species with following combination of characters: face, frons, genae, sometimes vertex, sides of pronotum, prepectus, dorsellum, spots on mesoscutum and scutellum, yellow; length 0·9–1·3 mm; gaster about twice as long as broad; longest seta of each cercus about twice the length of the next longest; propodeum relatively shiny, weakly sculptured, medially not very broadly emarginate and about as long as the dorsellum. Antenna (Fig. 342) .... ***atticus***(p. 253)

— *Either* body with at most mouth-edge, upper angle of mesopleuron, and dorsellum, pale; *or* larger species with gaster longer and longest seta of each cercus only about 1·5 times length of next longest. Propodeum medially usually shorter than the dorsellum, if not then propodeum more distinctly reticulate 105

105 Anterior setae of scutellum about twice as far from front edge of scutellum as from posterior setae. Spur of mid tibia 0·50–0·53 length of basitarsus. Propodeum medially almost as long as dorsellum. Gaster 2·3–2·6 times as long as broad .... ***specularis***(p. 230)

— Anterior setae of scutellum less than twice as far from front edge of scutellum as from posterior setae, sometimes nearly equidistant from these points. Spur of mid tibia 0·60–0·95 length of basitarsus. Propodeum nearly always at least slightly shorter than dorsellum. Gaster sometimes relatively shorter, or longer, than in above 106

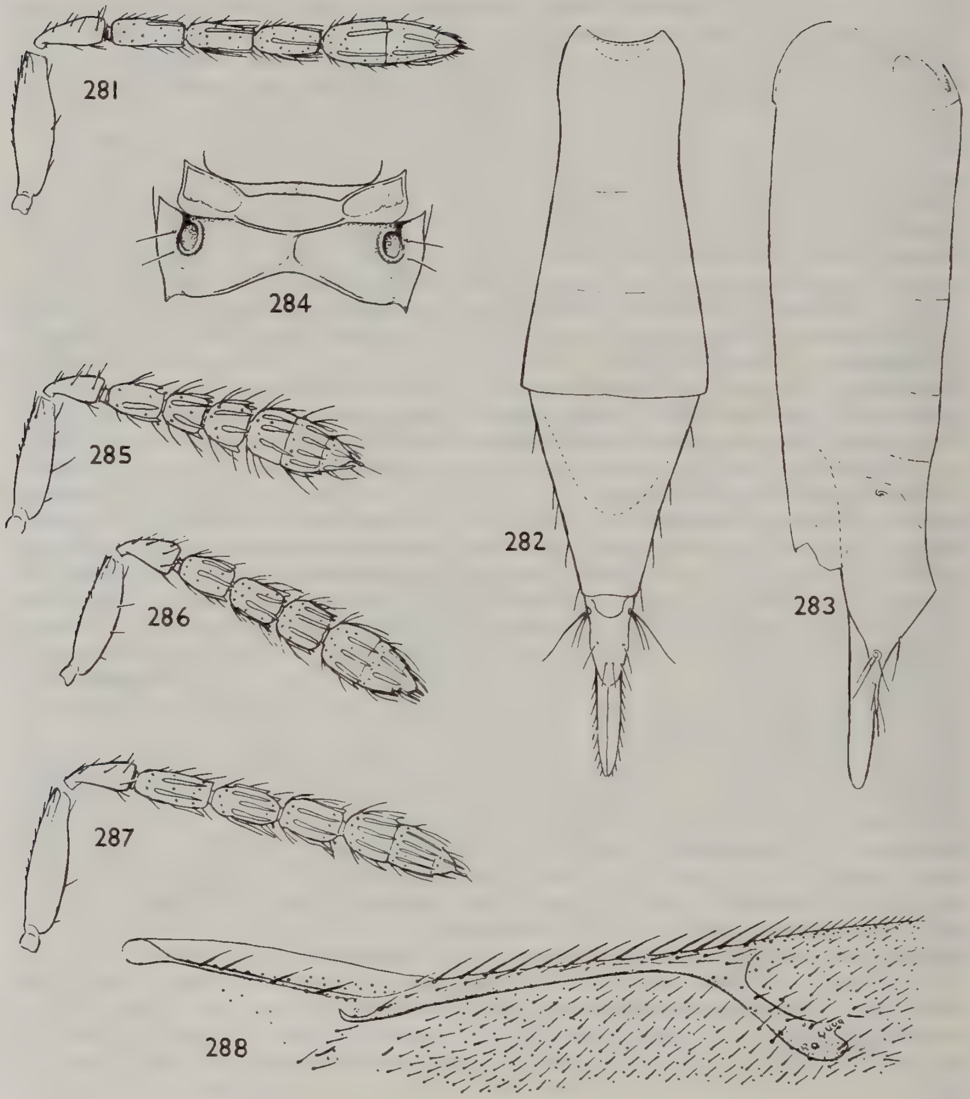
106 Head and thorax extensively yellow-marked. Longest seta of each cercus about 1·5 times the length of the next longest. Gaster about 2·3 times as long as broad. Mesoscutum rather dull, with extremely fine but rather sharply engraved reticulation .... ***A.* (*A*)** sp. 1

— At most mouth-edge, upper angle of mesopleuron, and dorsellum pale, except in *vassolensis*, which has longest seta of each cercus nearly or quite twice the length of the next longest, and gaster at least 3 times as long as broad. Mesoscutum often rather more shiny and with engraved sculpture less sharp 107

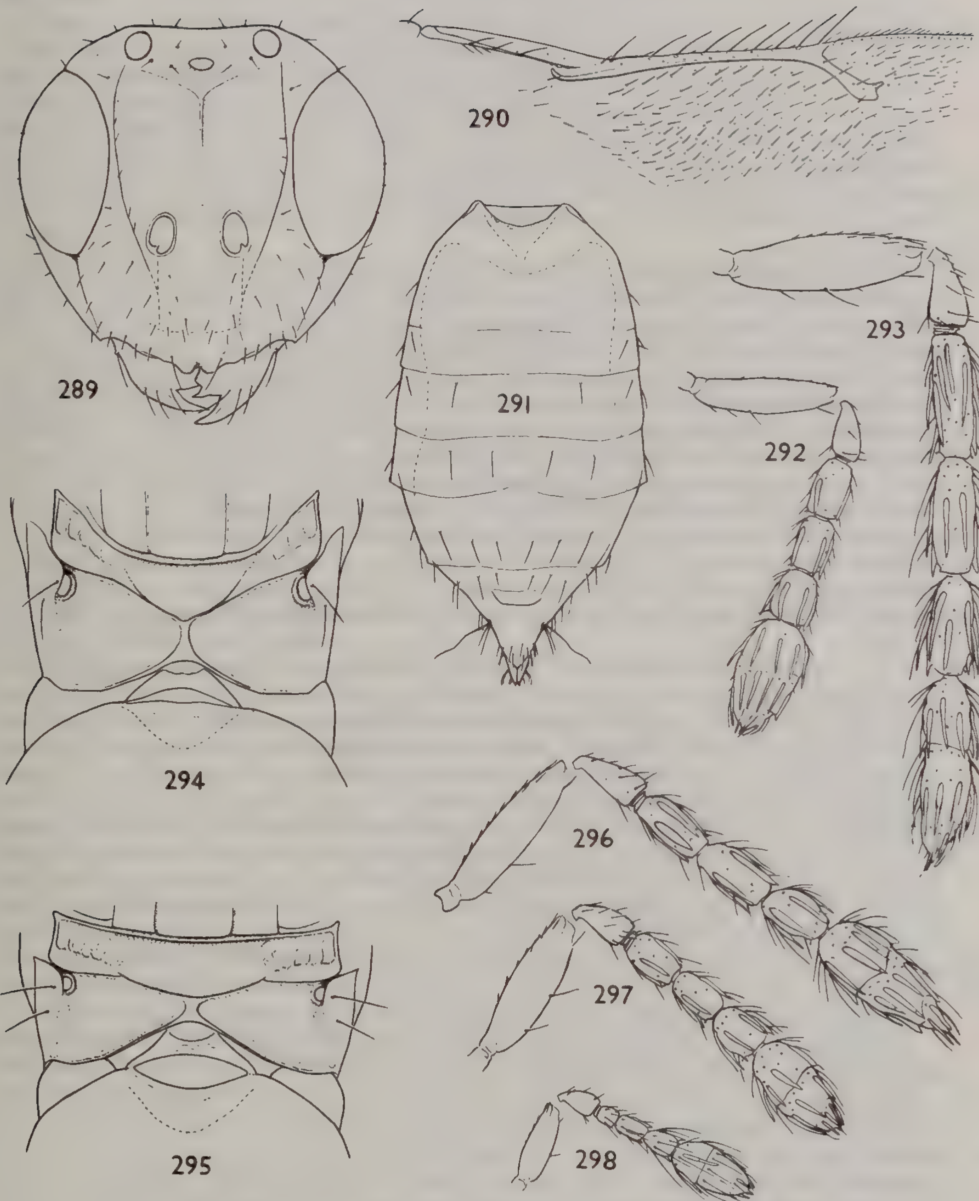
107 Antenna (Fig. 335) with clava acute, including its terminal spine 3·8–4·7 times as long as broad. Spur of mid tibia hardly more than half as long as basitarsus. Gaster 3·00–3·75 times as long as broad, strongly acuminate; ovipositor sheaths plus postcercale 0·45–0·60 length of hind tibia .... ***veronicae***(p. 250)

— Antennal clava usually 2·5–3·5 times as long as broad but if somewhat more elongate than this, then *either* the spur of the mid tibia is relatively longer, *or* the gaster is at most 2·8 times as long as broad with ovipositor sheaths plus postcercale at most 0·33 length of hind tibia 108

108 Propodeum (Fig. 294) less transverse, 2·5–2·7 times as broad as its length at level of spiracles, medially as long as or only slightly shorter than the dorsellum; its surface rather more distinctly reticulate than in the following species, the reticulation sometimes very slightly raised. Thorax 1·5–1·7 times as long as broad. Antenna (Fig. 293) with funicle not or hardly



Figs 281–288 281–283, *Aprostocetus* (*Aprostocetus*) *cultratus* sp. n. ♀: (281) antenna; (282) gaster, dorsal; (283) gaster, profile. 284, 285, *A.* (*A.*) *lysippe* (Walker) ♀: (284) metanotum and propodeum; (285) antenna. 286, *A.* (*A.*) *hians* Graham ♀, antenna. 287, *A.* (*A.*) *flavus* sp. n. ♀, antenna. 288, *A.* (*A.*) *hians* Graham ♀, forewing, anterior.



Figs 289–298 289–292, *Aprostocetus* (*Aprostocetus*) *eurystoma* Graham ♀: (289) head, frontal; (290) forewing, anterior; (291) gaster; (292) antenna. 293, 294, *A.* (*A.*) *zosimus* (Walker) ♀: (293) antenna; (294) metanotum and propodeum. 295, *A.* (*A.*) *rhacius* (Walker) ♀, metanotum and propodeum. 296, *A.* (*A.*) *menius* (Walker) ♀, antenna. 297, *A.* (*A.*) *caudatus* Westwood ♀, antenna. 298, *A.* (*A.*) *ciliatus* (Nees) ♀, antenna.

stouter than the pedicellus and not or hardly thickening distad; flagellum rather conspicuously pilose, usually testaceous to brown (fuscous in some dark northern forms). Forewing with marginal vein 4·0–5·3 times as long as stigmal vein and 1·4–1·5 times length of costal cell. Gaster 1·5–2·7 times as long as broad; ovipositor sheaths plus postcercale at most 0·3 length of hind tibia .... ***zosimus***(p. 232)

— Propodeum (Figs 295, 299) relatively more transverse, medially as a rule 0·50–0·75 length of dorsellum, rarely as long as dorsellum; its surface rather more shiny and with weaker sculpture. Thorax sometimes more, or less, elongate. Antenna with funicle often relatively stouter, or less obviously pilose, sometimes black. Forewing with marginal vein 2·8–4·5 times as long as stigmal vein. Gaster sometimes relatively longer, or with ovipositor sheaths plus postcercale more than 0·3 length of hind tibia 109

109 Gaster 1·5–1·8 times as long as broad. Antenna (Fig. 341) with clava 3·0–3·5 times as long as broad. Small species, length 0·95–1·10 mm. Thorax about 1·25 times as long as broad ***microscopicus***(p. 252)

— *Either* the gaster is at least twice as long as broad; *or* the antennal clava is clearly less than 3 times as long as broad (sometimes both characters are present simultaneously. Length 0·97–2·40 mm. Thorax usually relatively longer 110

110 Antenna (Fig. 334) with clava 3·2–3·7 times as long as broad. Thorax 1·05–1·20 times as long as broad. Gaster 2·0–2·8 times as long as broad; ovipositor sheaths plus postcercale 0·30–0·33 times length of hind tibia. Propodeum medially only 0·50–0·66 length of dorsellum, the ridge bordering the petiolar foramen virtually touching the hind edge of the dorsellum ***amenon***(p. 249)

— *Either* antennal clava at most 2·8 times as long as broad; *or* thorax 1·30–1·55 times as long as broad: *or* gaster with ovipositor sheaths plus postcercale 0·45–0·70 length of hind tibia (sometimes two or more of these characters are present simultaneously) 111

111 Antennal clava 3·9 times as long as broad, acute; flagellum brownish testaceous.
Gaster about twice as long as thorax, about 2·6 times as long as broad, acuminate (lectotype ♀ only known) .... ***beroe***(p. 253)

— Antennal clava at most 3·5 times as long as broad, if as much as this then flagellum black or fuscous 112

112 Gaster (Fig. 325) 2·65–3·75 times as long as broad, normally 2·0–2·3 times as long as thorax, rarely slightly less than twice; ovipositor sheaths plus postcercale 0·45–0·70 length of hind tibia and 1·5–2·0 times length of longest cercal seta. Forewing normally not reaching, or just reaching, tips of ovipositor sheaths, occasionally very slightly beyond. Antenna with first funicular segment usually slightly longer than the pedicellus; clava 2·6–3·4 times as long as broad. Moderate-sized species, length 1·6–2·4 mm 113

— Gaster distinctly less than 2·65 times as long as broad and not more than 1·7 times as long as thorax *except* in some *artemisiae* and *aega* which have forewing reaching somewhat beyond tips of ovipositor sheaths and first funicular segment sometimes not longer than the pedicellus. Ovipositor sheaths plus postcercale 0·2–0·5 length of hind tibia. Species often smaller (length 0·97–2·00 mm) 116

113 Body yellow-marked: at least head mainly, spots on pronotum and mesoscutum, and prepectus. At least the fore coxae partly yellow. Forewing about 2·4 times as long as broad, not reaching tips of ovipositor sheaths; marginal vein 4·1–4·9 times length of stigmal vein.
Antennal scape somewhat shorter than an eye, not reaching vertex .... ***vassolensis***(p. 231)

— Body dark with at most mouth-edge, upper angle of mesopleuron and dorsellum pale. All coxae usually black, sometimes the fore coxa more or less yellow. Forewing tending to be slightly broader than in above; marginal vein sometimes relatively shorter 114

114 Antenna (Fig. 326) with scape 0·90–0·97 length of eye, nearly reaching level of vertex in specimens with undistorted head; third funicular segment 1·7–2·5 times as long as broad. Hind tibia usually with at least a brownish median ring, often broadly black; mid tibia often dark-ringed. Spur of mid tibia 0·70–0·75 length of basitarsus. Forewing with marginal vein 3·2–4·3 times length of stigmal. Host on *Achillea ptarmica* .... ***anodaphus***(p. 244)

— Antenna with scape much shorter than an eye, hardly reaching median ocellus; third funicular segment 1·5–2·0 times as long as broad. Mid and hind tibiae usually yellow, occasionally somewhat infuscate medially 115

115 Marginal vein of forewing 3·25–3·70 times as long as stigmal vein. Spur of mid tibia 0·60–0·68 length of basitarsus. First segment of fore tarsus 2·8–3·0 times as long as broad. Host on *Tanacetum* .... ***tanaceticola***(p. 247)

— Marginal vein (3·6–) 3·8–4·5 times as long as stigmal vein. Spur of mid tibia 0·72–0·80 length of basitarsus. First segment of fore tarsus about twice as long as broad. Host on *Salix* **salictorum** (p. 246)

116 Parasite of *Rhabdophaga marginemtorquens* on *Salix* sp. Gaster 1·9–2·3 times as long as broad; ovipositor sheaths plus postcercale 0·33–0·40 length of hind tibia. Antennal clava 2·5–2·7 times as long as broad. Propodeum medially 0·60–0·73 length of dorsellum, less broadly emarginate, much as in *zosimus* (Fig. 293) .... **torquentis** (p. 249)

— Parasites of hosts on herbaceous plants. Gaster sometimes relatively longer, or shorter, or ovipositor sheaths hardly exserted. Propodeum medially sometimes relatively shorter and more broadly emarginate 117

117 Gaster (Fig. 337) short, 1·4–1·8 times as long as broad with ovipositor sheaths hardly exserted; ovipositor sheaths plus postcercale 0·19–0·25 length of hind tibia; tips of longest cercal setae about level with, or slightly beyond, tips of ovipositor sheaths. Antenna (Fig. 338) with clava 2·2–2·6 times as long as broad; flagellum moderately clavate. Hosts on *Artemisia* sp. **cecidomyiarum** (p. 251)

— Gaster with ovipositor sheaths relatively more exserted; ovipositor sheaths plus postcercale at least 0·3 length of hind tibia; tips of longest cercal setae usually reaching less far back. Antennal clava 2·5–3·5 times as long as broad 118

118 Host: *Rhopalomyia* sp. on *Artemisia* sp. Antenna (Fig. 339) with terminal spine of clava 0·33–0·44 as long as third segment of clava; first funicular segment not or hardly longer than pedicellus. Gaster (Fig. 340) 2·0–2·9 times as long as broad; ovipositor sheaths plus postcercale 0·3–0·5 length of hind tibia .... **artemisiae** (p. 252)

— Hosts: Cecidomyiidae on other plants. Antenna with terminal spine of clava at least 0·5 as long as third claval segment. Gaster 1·6–2·5 times as long as broad 119

119 Ovipositor sheaths plus postcercale 0·33 length of hind tibia. Mid and hind tibiae broadly black medially. Dorsellum dark, obscurely paler at sides. Host *Jaapiella veronicae* on *Veronica* sp. **scoticus** (p. 246)

— Ovipositor sheaths plus postcercale 0·37–0·60 length of hind tibia. Tibiae usually yellow, occasionally dark-banded. Dorsellum usually pale at sides, or wholly pale. Hosts *Dasineura* and *Cystiphora* spp. on other plants 120

120 Antenna with scape 3·0 times as long as broad; clava 2·5–2·6 times as long as broad ? **eleuchia** (p. 253)

— Antennal scape 3·6–4·7 times, clava 2·7–3·0 times, as long as broad 121

121 Antenna with scape 4·2–4·7 times as long as broad. Spur of mid tibia 0·55 length of basitarsus. Gaster 2·25–2·40 times as long as broad. Host *Dasineura glechomae* .... **aega** (p. 245)

— Antenna (Fig. 327) with scape 3·6 times as long as broad. Spur of mid tibia 0·66 length of basitarsus. Gaster 2·1–2·2 times as long as broad. Host *Dasineura trifolii* .... **rhacius** (p. 245)

122 Antenna (Fig. 349) with flagellum very long and slender; first funicular segment 4·5–5·0 times as long as broad, nearly or quite twice length of pedicellus; clava at most as long as third funicular segment plus half of second; combined length of pedicellus and flagellum 1·8 times breadth of mesoscutum. Body marked with tan and yellow; legs, except hind coxa more or less, yellowish. Forewing about 2·7 times as long as broad. Gaster lanceolate, longer than head plus thorax .... **cracens** (p. 300)

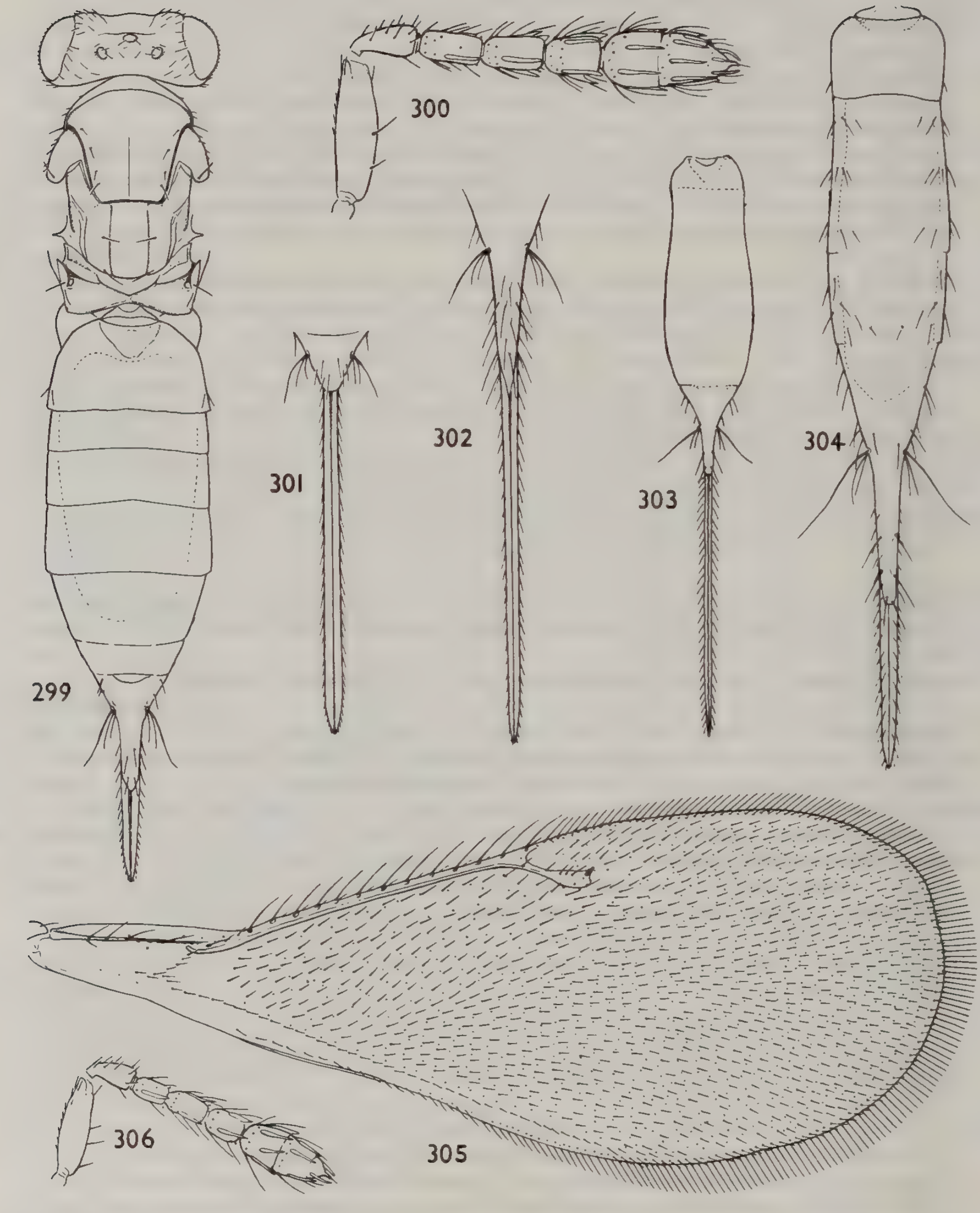
— Antenna with first funicular segment at most 3·8 times as long as broad; if as much as this then at most 1·75 times length of pedicellus, clava at least as long as third funicular segment plus three-quarters of second, pedicellus plus flagellum only 1·5 times breadth of mesoscutum, body not or hardly pale-marked 123

123 Antenna (Fig. 353) with clava 4·7–5·3 times as long as broad; funicle slender, its first segment 2·7–3·4 times, third segment 2·5–2·8 times, as long as broad. Gaster (Fig. 354) nearly twice as long as head plus thorax, strongly acuminate; ovipositor sheaths exserted to a length equal to 0·25–0·45 length of last tergite and having their sides nearly parallel. Propodeum medially as long as dorsellum .... **rubicola** (p. 316)

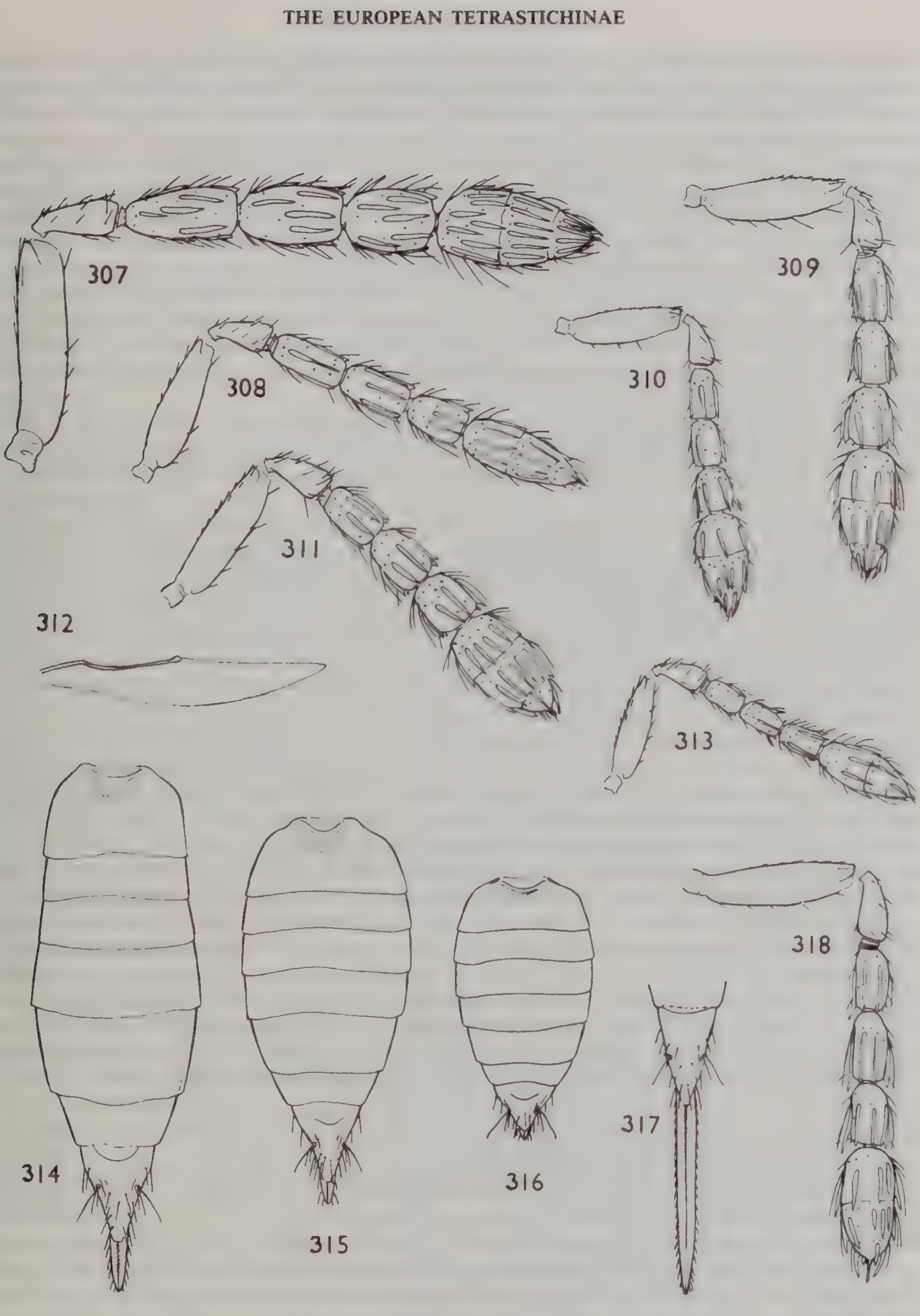
— Antennal clava at most 4·0 times as long as broad; funicle slender or stout, its segments rarely so elongate. Gaster often differing in shape. Propodeum sometimes shorter than dorsellum 124

124 Antenna (Fig. 350) with scape nearly as long as an eye, reaching somewhat above the vertex; funicle nearly filiform, its first segment longer than the pedicellus and about 3 times as long as broad, third fully twice as long as broad; clava plus terminal spine distinctly shorter than funicular segments two plus three. Body mainly testaceous; legs, scape and pedicellus testaceous. Submarginal vein of forewing with 6–7 dorsal setae .... **silaceus** (p. 298)

— Antennal scape not reaching above the vertex except in *nubigenus* and some *palustris*, in which



Figs 299–306 299, *Aprostocetus* (*Aprostocetus*) *caudatus* Westwood ♀, body. 300, 301, *A.* (*A.*) *longicauda* (Thomson) ♀: (300) antenna; (301) last tergite and ovipositor. 302, *A.* (*A.*) *leucone* (Walker) ♀, last tergite and ovipositor. 303, *A.* (*A.*) *terebrans* Erdös ♀, gaster. 304, 305, *A.* (*A.*) *verutus* Graham ♀: (304) gaster; (305) forewing. 306, *A.* (*A.*) *terebrans* Erdös ♀, antenna.



Figs 307–318 307, *Aprostocetus* (*Aprostocetus*) *westwoodii* (Fonscolombe) ♀, antenna. 308, *A.* (*A.*) *fonscolombei* sp. n. ♀, antenna. 309, *A.* (*A.*) *epicharmus* (Walker) ♀, antenna. 310, 311, *A.* (*A.*) *agrus* (Walker) ♀: (310) forma typica, antenna; (311) forma *conii* (Erdös), antenna. 312, 313, *A.* (*A.*) *gnomus* sp. n. ♀: (312) hindwing; (313) antenna. 314, *A.* (*A.*) *epicharmus* (Walker) ♀, gaster. 315, 316, *A.* (*A.*) *agrus* (Walker) ♀, gaster: (315) forma *conii* (Erdös); (316) forma typica. 317, *A.* (*A.*) *productus* sp. n. ♀, last tergite and ovipositor. 318, *A.* (*A.*) *grylli* (Erdös) ♀, antenna.

the first funicular segment is not longer than the pedicellus and less than 3 times as long as broad, and the clava is longer than funicular segments two plus three. *A. palustris* also has the body wholly black. In other species the antennal scape usually does not reach the vertex and is usually shorter than an eye 125

125 Submedian lines of scutellum slightly nearer to each other than to sublateral lines. Antenna (Figs 355, 356) with clava plus terminal spine distinctly shorter than funicular segments two plus three; first funicular segment 2·8–3·2 times as long as broad, much longer than the pedicellus. Body non-metallic, either black, or more or less marked with tan or reddish. Reticulation of mesoscutum rather sharply engraved 126

— Submedian lines of scutellum nearly always at least slightly nearer to sublateral lines than to each other; if about equidistant from both then antennal clava plus spine at least nearly as long as funicular segments two plus three; first funicular segment often less than 2·8 times as long as broad, often not longer than the pedicellus. Body sometimes metallic. Reticulation of mesoscutum usually more delicately engraved 127

126 Smaller species, length 1·2–1·4 mm. Antenna (Fig. 356) with distal segments of funicle relatively shorter, the second 2·2–2·5 times, the third 1·7–1·8 times, as long as broad. Gaster ovate, 1·9–2·3 times as long as broad, as long as or very slightly longer than head plus thorax **_phloeophthori_**(p. 295)

— Larger species, length 2·8 mm. Antenna (Fig. 355) with distal segments of funicle relatively longer, the second 2·8 times, the third 2·4 times, as long as broad. Gaster lanceolate, nearly 3·5 times as long as broad, about 1·5 times as long as head plus thorax .... **_hedqvisti_**(p. 295)

127 Ovipositor sheaths (Figs 359–361) much exserted, appearing nearly or quite parallel-sided in dorsal view; ovipositor sheaths plus postcercale 0·4–1·2 times length of hind tibia, exserted part of sheaths at least slightly, often much, longer than postcercale. Gaster lanceolate, longer than head plus thorax. Propodeum medially broadly and deeply emarginate, shorter than dorsellum. Body black, non-metallic 128

— Ovipositor sheaths less far exserted, often hardly so, or even concealed; when visible, tapering in dorsal view; exserted part of sheaths usually shorter than postcercale, occasionally as long, but rarely longer. Gaster varying from subcircular to lanceolate. Propodeum usually less broadly and deeply emarginate, usually not shorter than the dorsellum (if otherwise then the dark parts of the body often have a slight metallic tinge, or the body is more or less yellow) 130

128 Forewing (Fig. 362) with stigmal vein forming an angle of 25°–30° with the costal edge of the wing. Legs slightly more slender; spur of mid tibia about 0·65 length of basitarsus. Ovipositor sheaths plus postcercale 1·0–1·1 length of hind tibia. Antenna (Fig. 357) with external surface of scape bare except for the margins. Tibiae usually testaceous, occasionally with brownish ring .... **_zoilus_**(p. 341)

— Forewing (Fig. 363) with stigmal vein forming an angle of 45°–47° with the costal edge of the wing. Legs slightly less slender; spur of mid tibia 0·80–0·85 length of basitarsus. *Either* ovipositor sheaths plus postcercale at least slightly shorter than hind tibia; *or* (some *emesa*) scape with some additional setae on the disc (Fig. 358). Mid and hind tibiae usually broadly infuscate 129

129 Ovipositor sheaths plus postcercale (Fig. 360) 0·75–0·90 (?–1·2) length of hind tibia. Marginal vein of forewing 3·6–4·0 times length of stigmal vein .... **_emesa_**(p. 341)

— Ovipositor sheaths plus postcercale 0·40–0·63 length of hind tibia. Marginal vein of forewing 2·9–3·6 times length of stigmal vein .... **_catius_**(p. 343)

130 Species with following combination of characters: gaster lanceolate, 1·3–1·5 times as long as head plus thorax, with tip of hypopygium situated distinctly beyond the middle; malar sulcus with a small fovea; submedian lines of scutellum not or hardly nearer to sublateral lines than to each other; propodeum medially slightly shorter than dorsellum; body extensively yellow-marked, sometimes mainly yellow .... **_escherichi_**(p. 303)

— Gaster sometimes relatively shorter, but if not then tip of hypopygium not situated beyond the middle, malar sulcus without fovea. Submedian lines of scutellum nearly always at least slightly nearer to sublateral lines than to each other. Propodeum usually as long as dorsellum. Body sometimes without or with very restricted yellow markings..................... 131

131 Species with following combination of characters: propodeum broadly and deeply emarginate, medially slightly shorter than dorsellum; hind coxae vertical with respect to tangential plane of mesoscutum–scutellum; thorax in dorsal view at most 1·3 times as long as broad; gaster lanceolate, 2·5–3·0 times as long as broad, very distinctly longer than head plus thorax; body black, not or hardly pale-marked 132

— Propodeum medially usually as long as dorsellum, if not then *either* hind coxae are oblique with respect to plane of mesoscutum–scutellum (as in most species of this section), *or* the thorax is relatively longer, *or* the gaster is relatively shorter (sometimes two or more of these characters are present simultaneously). Body sometimes marked with reddish or yellow 134

132 Antenna (Fig. 364) with funicle filiform; clava hardly broader than funicle, about 3·5 times as long as broad, hardly as long as funicular segments two plus three; scape extensively reddish. Body with slight metallic tinge in places ...... ***rufiscapus*** (p. 346)

— Antenna (Fig. 365) with funicle thickening at least slightly distad; clava at most 2·8 times as long as broad, as long as or a little longer than funicular segments two plus three; scape black or mainly so. Body black, non-metallic 133

133 POL 1·3–1·6 OOL. Femora black at least proximally; tibiae often more or less infuscate ***constrictus*** (p. 304)

— POL 1·1 OOL. Femora testaceous with at most hind femora more or less infuscate; tibiae testaceous ...... ***verticalis*** (p. 305)

134 Scutellum in profile weakly convex; anterior setae of scutellum slightly shorter than the posterior setae, their length only about 0·5 the distance between the submedian lines, and placed in the middle; submedian lines parallel, or occasionally diverging very slightly caudad. Median carina of propodeum with a short triangular basal fovea. Mid lobe of mesoscutum normally without an impressed median line (occasionally it is indicated by weaker sculpture). Antenna (Figs 256, 383, 384) usually with rather long terminal spine. Body usually partly to mainly yellowish or testaceous; the black parts sometimes with a very weak metallic tinge. Forewing 2·3–2·6 times as long as broad 135

— Scutellum in most species moderately to strongly convex in profile; if weakly convex or doubtful, then *either* anterior setae of scutellum are as long as the posterior setae, and sometimes the body is black with at most mouth-edge, upper angle of mesopleuron, and dorsellum pale; *or* submedian lines of scutellum converge at least slightly caudad, and the median carina of the propodeum has a long sublinear furrow extending from the base to about three-quarters of its length 137

135 Forewing 2·3–2·4 times as long as broad, reaching well beyond tip of gaster; marginal vein 4·2–4·6 times length of stigmal vein. Head, thorax and gaster all yellow-marked, sometimes mainly yellow. Legs rather less stout; hind femora 3·7–4·0 times as long as broad. Larger species, length 1·7–2·4 mm. POL equal to or hardly greater than OOL ...... ***phragmiticola*** (p. 284)

— Forewing 2·4–2·6 times as long as broad, reaching at most slightly beyond tip of gaster, sometimes not reaching it; marginal vein 3–4 times length of stigmal vein. Body colour variable, sometimes only the mouth edge, upper angle of mesopleuron, and dorsellum testaceous. Legs shorter and stouter; hind femora 3·0–3·5 times as long as broad. On average smaller species, length 1·2–2·0 mm. POL very slightly to distinctly greater than OOL 136

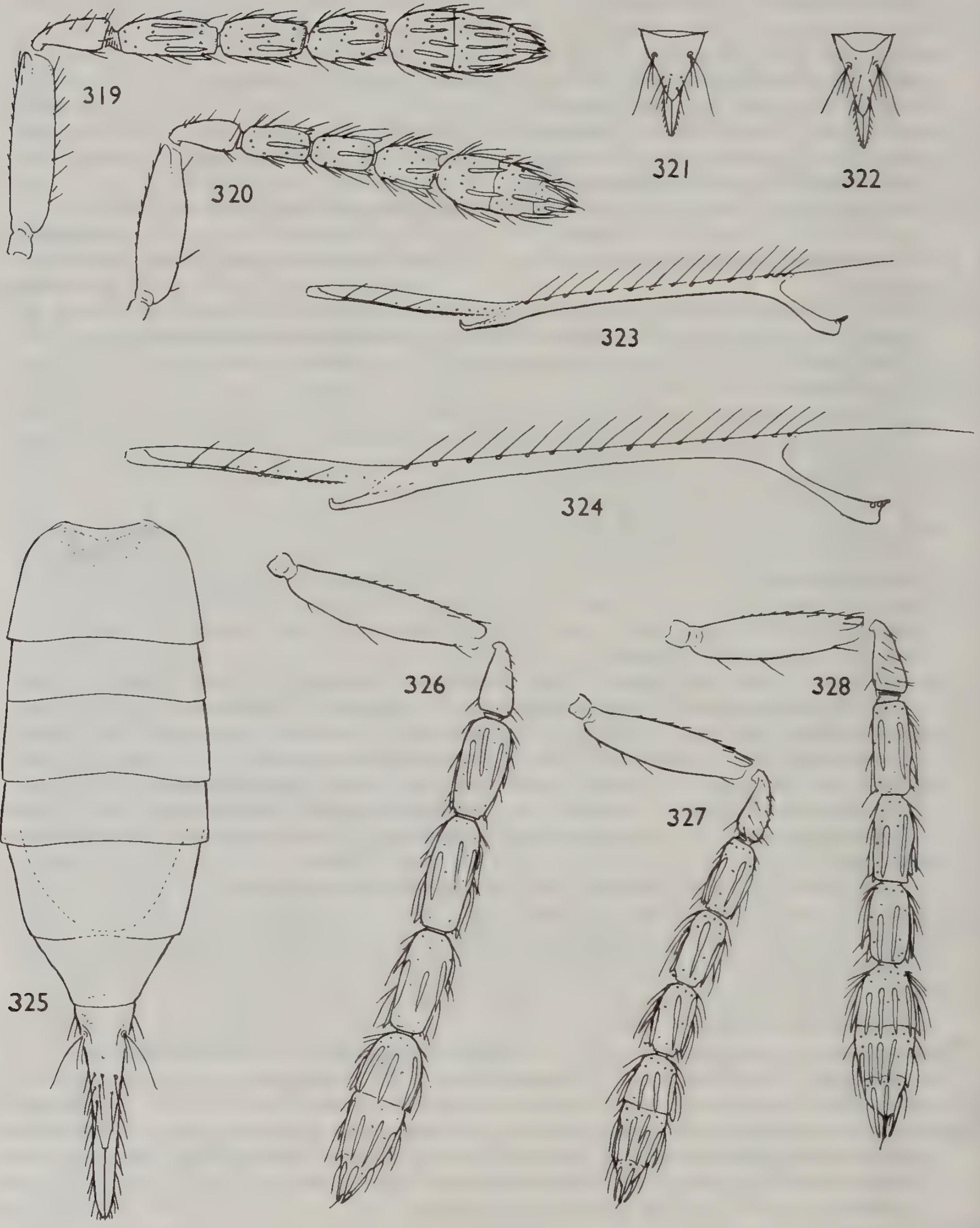
136 Head black, with at most mouth-edge testaceous. Thorax and gaster usually black or dark brown with upper angle of mesopleuron and dorsellum testaceous; but more extensively pale in some specimens from southern Europe. Pronotum 0·25–0·35 length of mesoscutum. Marginal vein of forewing as long as or slightly longer than costal cell. Head 1·15–1·27 times as broad as mesoscutum ...... ***phineus*** (p. 354)

— Head with face, genae and frons mainly yellowish. Thorax and gaster with extensive yellow or testaceous markings. Pronotum 0·5 length of mesoscutum. Marginal vein of forewing a little shorter than costal cell. Head hardly broader than mesoscutum ...... ***debilitatus*** (p. 356)

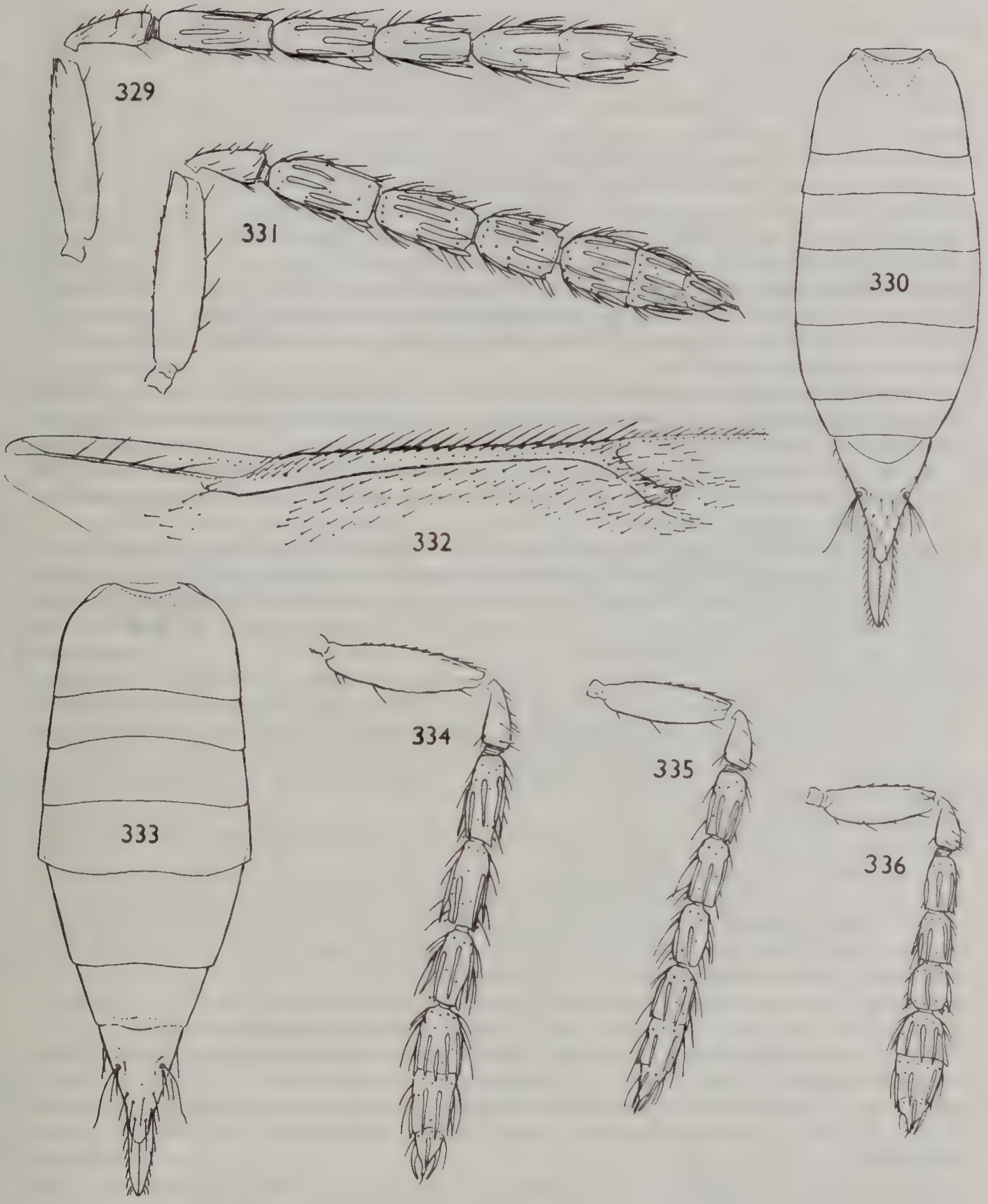
137 Madeiran species with antennal scape 0·9–1·0 the length of an eye and reaching slightly above the vertex; body black, head and thorax with some yellow markings; legs, including fore coxae more or less, yellow, occasionally the mid and hind femora dark-marked; marginal vein of forewing 4·5–5·0 times length of stigmal vein ...... ***nubigenus*** (p. 298)

— *Either* (*flavifrons*) Madeiran species resembling *nubigenus* but with antennal scape hardly reaching level of vertex; *or* European species with scape not reaching above vertex except occasionally in *palustris* which has body entirely black, all coxae black, femora and sometimes tibiae infuscate medially, and marginal vein at most slightly more than 4 times length of stigmal vein 137a

137a Madeiran species with anterior setae of scutellum very close to posterior setae and 3–4 times as far from front edge of scutellum as from posterior setae. Marginal vein 4·5–5·0 times length of stigmal vein. Body black, usually with some yellowish or tan markings on head and thorax, the black parts sometimes with a slight bronze tinge. Antenna (Fig. 366) with clava 2·0–2·4 times as long as broad ...... ***flavifrons*** (p. 296)



Figs 319–328 319, *Aprostocetus* (*Aprostocetus*) *craneiobiae* sp. n. ♀, antenna. 320, 321, *A.* (*A.*) *meroe* sp. n. ♀: (320) antenna; (321) last tergite. 322, 323, *A.* (*A.*) *rhipheus* (Walker) ♀: (322) last tergite; (323) forewing, anterior. 324, *A.* (*A.*) *meroe* sp. n. ♀, forewing, anterior. 325, 326, *A.* (*A.*) *anodaphus* (Walker) ♀: (325) gaster; (326) antenna. 327, *A.* (*A.*) *rhacius* (Walker) ♀, antenna. 328, *A.* (*A.*) *salictorum* sp. n. ♀, antenna.



Figs 329–336 329, 330, *Aprostocetus* (*Aprostocetus*) *fabicola* (Rondani) ♀: (329) antenna; (330) gaster. 331–333, *A.* (*A.*) *lachares* (Walker) ♀: (331) antenna; (332) forewing, anterior; (333) gaster. 334, *A.* (*A.*) *amenon* (Walker) ♀, antenna. 335, *A.* (*A.*) *veronicae* sp. n. ♀, antenna. 336, *A.* (*A.*) *minimus* (Ratzeburg) ♀, antenna.

— European species with anterior setae of scutellum rarely so close to posterior setae as in *flavifrons*. Marginal vein usually less than 4·5 times length of stigmal vein. Head and thorax often without pale markings, sometimes distinctly metallic. Antennal clava sometimes more elongate 138

138 Head, thorax and gaster with at least a weak bluish or greenish metallic tinge in places (very weak in *grylli* and in *forsteri* usually visible only on dark parts), sometimes strongly metallic blue to green or bronze 139

— Head and thorax black, or black with yellow and tan or reddish markings, non-metallic or with at most a weak bronze tinge 153

139 Hindwing acute. Antenna (Fig. 318) with clava obtuse but having its terminal spine conspicuous and nearly or about as long as the third claval segment. Gaster 3·0–5·7 times as long as broad, about twice as long as but narrower than thorax. Legs yellowish including usually the fore coxae more or less; hind femora sometimes partly infuscate. Body black with very weak olive or bluish tinge which is sometimes hardly discernible .... ***grylli*** (p. 289)

— Hindwing usually subobtuse or obtuse, occasionally acute. Antenna with clava more pointed but having a shorter and relatively less conspicuous terminal spine. *Either* the gaster is at most 2·5 times as long as broad; *or* all the femora are partly to mainly black. Body sometimes with more distinct metallic tints 140

140 Propodeal callus with 3–4 setae. Antenna (Fig. 367) with clava hardly as long as funicular segments two plus three. Mid lobe of mesoscutum with areoles of reticulation 2–3 times as long as broad. Host: *Kermes* sp. on *Quercus* spp. .... ***coccidiphagus*** (p. 352)

— Propodeal callus usually with 2 setae; if with 3 then antennal clava as long as or longer than funicular segments two plus three. Mid lobe of mesoscutum with areoles of reticulation most often 3–4 times as long as broad 141

141 Submedian lines of scutellum about equidistant from each other and from sublateral lines, enclosing a space somewhat more than twice as long as broad. Gaster 2·5–3·0 times as long as broad. Antenna (Fig. 319) with third funicular segment 1·5–1·6 times as long as broad. Body black with bluish metallic tint; at most the dorsellum pale. Tegulae black. Mid and hind tibiae broadly infuscate to mainly black .... ***craneiobiae*** (p. 241)

— Submedian lines of scutellum at least very slightly nearer to sublateral lines than to each other, enclosing a space at most twice as long as broad. Gaster sometimes relatively shorter. Antenna with third funicular segment sometimes quadrate. Body sometimes extensively pale-marked. Tegulae and tibiae often mainly or wholly yellow 142

142 Body in mature specimens without yellow markings except sometimes the mouth-edge, upper angle of mesopleuron and dorsellum 143

— Body with at least some yellow markings in addition to those noted in alternate part of couplet, often extensively or nearly wholly yellow 151

143 Gaster 1·20–1·75 times as long as broad. Antenna (Figs 368, 369) with third funicular segment 1·5–1·9 times as long as broad; clava not or hardly longer than funicular segments two plus three; scape yellow over at least distal half, sometimes wholly so. Anterior setae of scutellum not or only slightly behind the middle. Hosts: Coccoidea 144

— *Either* gaster at least twice as long as broad; *or* third funicular segment less than 1·5 times as long as broad *and* the clava at least slightly longer than funicular segments two plus three; *or* antennal scape black with at most its tip narrowly pale; *or* anterior setae of scutellum far behind the middle. Hosts: Diptera: Cecidomyiidae so far as known 145

144 Antenna (Fig. 368) with clava about 2·5 times as long as broad, its first segment occupying nearly half the total length, second segment very distinctly shorter than the first. Gaster 1·50–1·72 times as long as broad .... ***ceroplastae*** (p. 353)

— Antenna (Fig. 369) with clava 2·5–3·3 times as long as broad, its first segment occupying distinctly less than half the total length, second segment nearly as long as the first. Gaster 1·2–1·5 times as long as broad .... ***toddaliae*** (p. 353)

145 Very small squat species, length 0·75–1·30 mm. Anterior setae of scutellum somewhat less than twice as far from front edge of scutellum as from posterior setae. Gaster 1·5–2·1 times as long as broad. Body black with at most a weak bluish tint, not pale-marked; tegulae, also mid and hind tibiae mainly, black. Propodeum usually a little shorter than dorsellum ***artemisicola*** (p. 350)

— Species usually 1·5 mm or more in length, but if smaller then *either* anterior setae of scutellum at least twice as far from front edge as from posterior setae *or* body more slender and gaster distinctly more than twice as long as broad. Tegulae often more or less yellow; mid and hind tibiae sometimes mainly to entirely yellow. Propodeum often as long as dorsellum 146

146 Gaster 1·30–1·85 times as long as broad. Anterior setae of scutellum at least twice as far from front edge of scutellum as from posterior setae. Tegulae black. Body without yellow markings, black with a weak bluish tint. Hind tibiae usually almost entirely black, at most broadly pale at tip and narrowly so at base. Spur of mid tibia as long as basitarsus 147

— Gaster usually at least twice as long as broad, if somewhat less than twice then tegulae and tibiae yellow, or body more or less yellow-marked 148

147 Antenna (Fig. 370) with third funicular segment quadrate to 1·2 times as long as broad; clava 2·0–2·5 times, first funicular segment 1·6–1·9 times, as long as broad. Species apparently associated with Umbelliferae .... ***brachycerus***(p. 347)

— Antenna (Fig. 371) with third funicular segment 1·15–1·40 times as long as broad; clava 2·5–3·0 times, first funicular segment 1·8–2·0 times, as long as broad. Host on *Chamaenerion* ***epilobii***(p. 348)

148 Antenna (Fig. 373) with third funicular segment quadrate; combined length of pedicellus and flagellum not quite equal to breadth of mesoscutum. Tegulae, also mid and hind tibiae mainly, black. Longest seta of each cercus about 1·6 length of next longest. Body not pale-marked, black with bluish tinge (sometimes very weak) in places. Gaster 2·2–2·5 times as long as broad. Costal cell of forewing narrow, hardly as broad as the thickest part of the marginal vein .... ***orestes***(p. 351)

— *Either* antenna with third funicular segment at least slightly longer than broad *and* combined length of pedicellus and flagellum at least equal to breadth of mesoscutum; *or* tegulae partly to wholly yellowish; *or* longest seta of each cercus nearly twice length of next longest. Tibiae often yellow. Head and thorax sometimes yellow-marked, occasionally also the gaster, or with conspicuous metallic tints. Gaster sometimes relatively shorter. Costal cell of forewing sometimes broader than the thickest part of the marginal vein 149

149 Gaster lanceolate, more than twice as long as broad, acuminate. Tegulae black. Body black with weak metallic tint, at most the mouth-edge pale. Mid and hind tibiae mainly black. Forewing beyond speculum thickly pilose, the speculum not extended below the marginal vein. Host on *Achillea ptarmica* .... ***ptarmicae***(p. 346)

— *Either* the gaster is at most twice as long as broad and not acuminate; *or* tegulae are partly to entirely yellow. Body sometimes yellow-marked, or conspicuously metallic. Tibiae often wholly yellow, sometimes more or less infuscate medially. Forewing beyond speculum less thickly pilose, speculum extended as at least a narrow bare strip below marginal vein and usually reaching the stigmal vein 150

150 Tegulae blackish. Body not yellow-marked. Gaster about twice as long as broad. Hind tibiae broadly infuscate medially .... ***andalusiacus***(p. 349)

— Tegulae partly to entirely yellow or testaceous. *Either* body more or less yellow-marked; *or* gaster more than twice as long as broad; *or* hind tibiae mainly to entirely yellow (sometimes two or more of these characters are present simultaneously) 151

151 Gaster 1·6–2·0 times as long as broad. Body usually with only mouth-edge, upper angle of mesopleuron, and dorsellum, pale; gaster occasionally slightly pale-marked at base. All tibiae entirely yellow. From galls of *Plagiotrochus fusifex* on *Quercus coccifera* ***fusificola***(p. 349) (Note. Some southern European specimens of *brachycerus* might run here. That species appears to be associated with Umbelliferae.)

— Gaster usually more than twice as long as broad, if twice or slightly less than twice then body more extensively yellow-marked 152

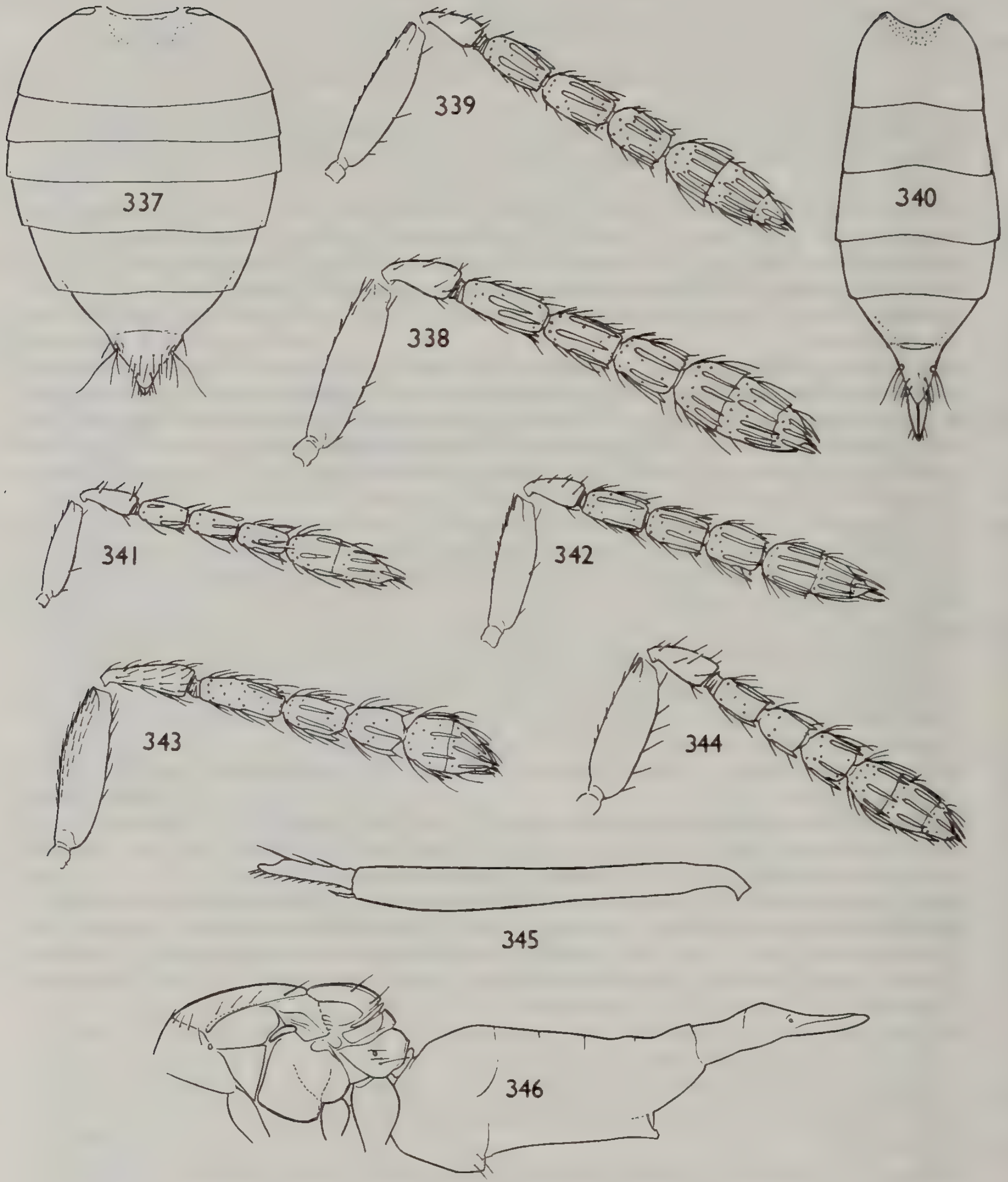
152 Body with at most the mouth-edge, upper angle of mesopleuron, and dorsellum, more or less yellow. Gaster 2·35–3·50 times as long as broad. Size on average less, length 1·0–2·5 mm. Host unknown .... ***viridinitens***(p. 345)

— Body usually more or less extensively yellow-marked; only occasionally mainly dark, but then at least the face more or less yellow in addition to the parts mentioned under *viridinitens*. Gaster 1·8–2·5 times as long as broad. Size on average greater, length 1·5–2·8 mm. Hosts on *Centaurea* spp. .... ***forsteri***(p. 343)

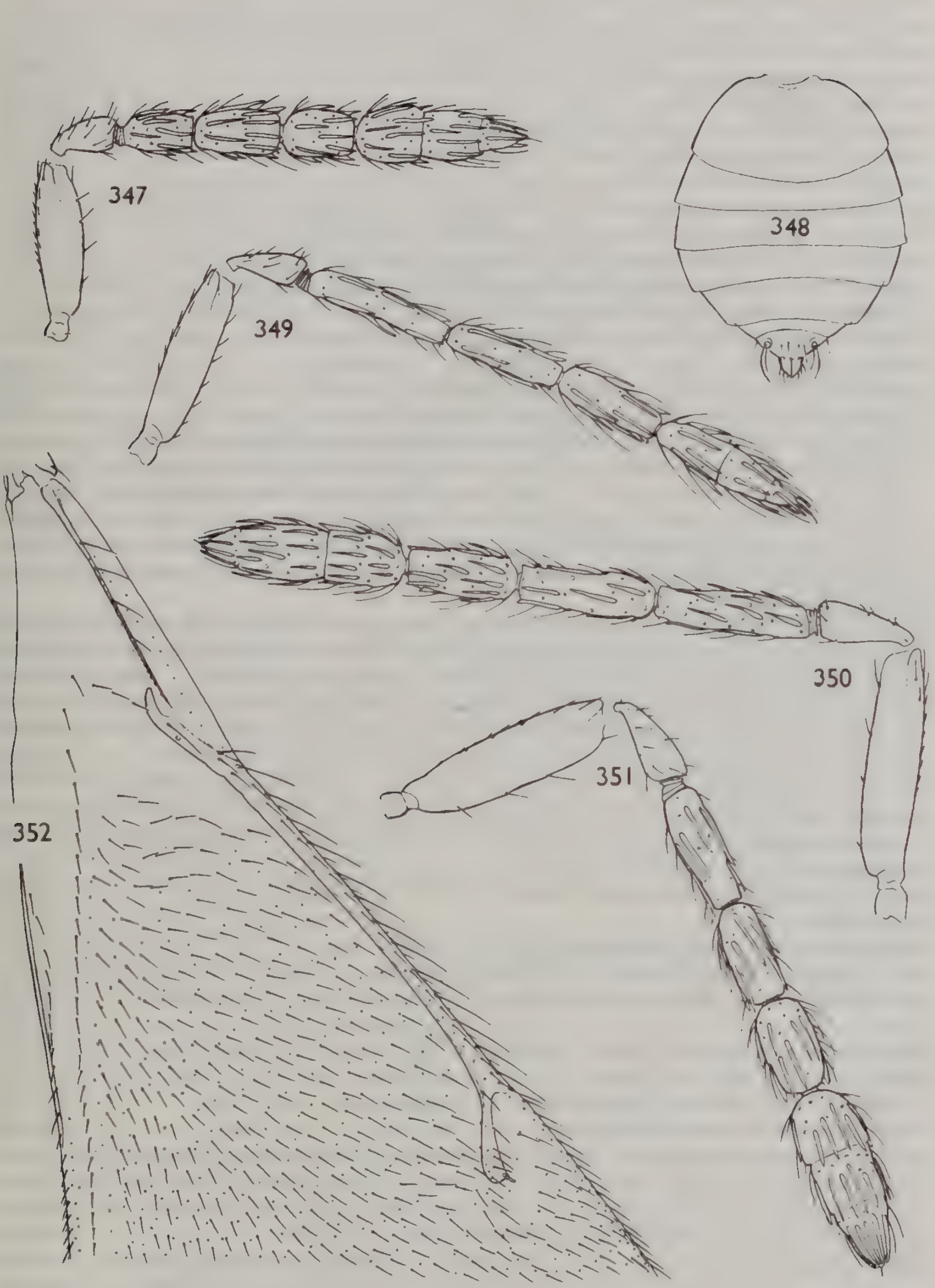
153 Antenna (Fig. 374) with first funicular segment shorter and narrower than second, subquadrate; third segment quadrate to slightly transverse. Very small species, length 0·90–1·05 mm. Hindwings strongly acute. Body black; legs mainly to almost entirely black. Apparently associated with *Agrostis* spp. (Gramineae) .... ***subanellatus***(p. 336)

— Antenna with first funicular segment not shorter than second, often longer than broad. The other characters usually not all present simultaneously 154

154 Species with following combination of characters: hindwing sharply pointed; gaster lanceolate,



Figs 337–346 337, 338, *Aprostocetus* (*Aprostocetus*) *cecidomyiarum* (Bouché) ♀: (337) gaster; (338) antenna. 339, 340, *A.* (*A.*) *artemisiae* (Erdös) ♀: (339) antenna, paralectotype; (340) gaster, lectotype. 341, *A.* (*A.*) *microscopicus* (Rondani) ♀, antenna, paralectotype. 342, *A.* (*A.*) *atticus* sp. n. ♀, antenna. 343, *A.* (*A.*) *phillyreae* (Domenichini) ♀, antenna. 344–346, *A.* (*A.*) *clavicornis* (Zetterstedt) ♀: (344) antenna; (345) mid tibia and basitarsus; (346) body (less head), profile.



Figs 347–352 347, 348, *Aprostocetus* (*Aprostocetus*) *neglectus* (Domenichini) ♀: (347) antenna; (348) gaster. 349, *A.* (*A.*) *cracens* sp. n. ♀, antenna, holotype. 350, *A.* (*A.*) *silaceus* sp. n. ♀, antenna. 351, 352, *A.* (*A.*) *alveatus* Graham ♀; (351) antenna; (352) forewing.

3·5 times as long as broad, much longer than head plus thorax; face, genae, inner orbits, and basal third of gaster, yellow; legs yellow with hind coxae dark proximally; antenna (Fig. 375) with clava distinctly longer than funicular segments two plus three, first funicular segment somewhat shorter than pedicellus; very small species, length 1·1 mm .... ***elegantulus*** (p. 302)

— Hindwing most often obtuse or rounded at apex, when sharply pointed then gaster relatively shorter, and *either* body wholly black, *or* antennal clava not longer than funicular segments two plus three. In species with pointed hindwings the coxae are usually black, femora often infuscate, tibiae sometimes more or less so 155

155 Head, thorax, and usually gaster, with yellow and tan markings of moderate extent. Antenna (Fig. 376) with combined length of pedicellus and flagellum 1·3–1·7 times breadth of mesoscutum; first segment of clava occupying nearly half the total length; all funicular segments longer than broad, third at least 1·8 times as long as broad; terminal spine of clava prominent, 0·6–0·8 length of third claval segment. Median carina of propodeum normally divided longitudinally by a sublinear furrow which extends from its base to at least three-quarters of its length. Thorax tending to be elongate, (1·5–) 1·6–1·8 times as long as broad. Forewing 2·35–2·70 times as long as broad; marginal vein 4·5–5·0 times length of stigmal. Head 1·05–1·15 times as broad as mesoscutum .... ***arenarius***(p. 301)

— *Either* body black with only mouth-edge, upper angle of mesopleuron, and dorsellum, pale; *or* if with more extensive yellow and tan markings, then antenna with combined length of pedicellus and flagellum at most 1·2 times breadth of mesoscutum, third funicular segment sometimes relatively shorter, claval spine shorter, often very short and invisible amongst the sensilla, propodeal carina with a triangular basal fovea which extends at most half its length, forewing often less broad or with marginal vein relatively shorter, head often not broader than mesoscutum 156

156 Thorax about 1·7 times as long as broad. Antenna similar to that of *arenarius* (Fig. 376) with combined length of pedicellus and flagellum about 1·5 times breadth of mesoscutum. Body black with only mouth-edge and upper angle of mesopleuron testaceous... ***subcylindricus***(p. 302)

— Thorax rarely more than 1·5 times as long as broad, if so then combined length of pedicellus and flagellum at most 1·2 times breadth of mesoscutum, first segment of clava and sometimes its terminal spine, relatively shorter. Body sometimes extensively pale-marked 157

157 Scutellum in profile (Fig. 379) weakly convex. Mid lobe of mesoscutum without, or with very fine and weakly impressed, median line. Body usually black with at most-mouth edge, upper angle of mesopleuron, and dorsellum, pale (but with testaceous markings of moderate extent in some southern specimens of *phineus*) 158

— Scutellum in profile moderately to strongly convex. Mid lobe of mesoscutum most often with a median line 159

158 Gaster lanceolate, strongly acuminate, 2·5–3·5 times as long as broad, 1·5–1·8 times length of head plus thorax; last tergite 1·5–1·7 times as long as its basal breadth. Antenna (Fig. 381) with funicle distinctly stouter than pedicellus; flagellum with rather strongly outstanding setae .... ***humilis***(p. 327)

— Gaster ovate to long-ovate, hardly acuminate, 1·4–2·0 times as long as broad, at most 1·25 times length of head plus thorax; last tergite at most as long as, but usually slightly shorter than, its basal breadth. Antenna (Fig. 383) with funicle hardly stouter than pedicellus; flagellum with less outstanding setae .... ***phineus***(p. 354)

159 Forewing with stigmal vein (Fig. 387) strongly curved, stigma moderate-sized and separated by about 2·5 times it height from costal edge of wing. Anterior setae of scutellum well behind the middle, nearly twice as far from front edge of scutellum as from posterior setae. Antenna (Fig. 386) with third funicular segment slightly longer than broad .... ***claviger***(p. 334)

— Forewing with stigmal vein at most moderately curved and (except in *stigmaticalis*) relatively smaller; in *stigmaticalis* the anterior setae of the scutellum are approximately in the middle and the third funicular segment is not or hardly longer than broad 160

160 Forewing (Fig. 388) with stigma rather large, the distance between its upper edge and costal edge of wing 1·8–2·0 times the height of the stigma. Anterior setae of scutellum approximately in the middle and about equidistant from front edge of scutellum and from posterior setae. Antenna with third funicular segment not or hardly longer than broad ***stigmaticalis***(p. 343)

— Forewing with stigma at most moderate-sized, the distance between its upper edge and costal margin of wing at least 2·75 times the height of the stigma, and usually more. Anterior setae of scutellum most often at least slightly behind the middle and nearer to the posterior setae than to front edge of scutellum 161

161 Antenna (Figs 390, 392–395, 398–400): clava with slender terminal spine which is almost as long as the third claval segment; apical seta of the spine 0·3–0·5 length of spine. Body entirely black, or with at most mouth-edge, upper angle of mesopleuron, and dorsellum pale. Hindwing sometimes obtuse, but often pointed or acute (strongly acute in the smallest specimens) 162

— Antenna with terminal spine of clava relatively shorter but having a longer apical seta; the spine at most 0·66 length of third claval segment. Body sometimes extensively pale-marked. Hindwing nearly always obtuse or rounded 170

162 Gaster (Fig. 389) 2·2–2·7 times as long as broad, with its somewhat exserted ovipositor sheaths appearing very stout in dorsal view, their width about 0·6 that of hind femur. Femora stout, hind femora hardly more than 3 times as long as broad; fourth segment of mid and hind tarsi stout, as long as basitarsus. Hind coxa slightly less than twice as long as broad, its hind edge strongly curved. Antenna (Fig. 390) with scape reaching at least middle of median ocellus but only 3·6–4·0 times as long as broad; third funicular segment distinctly longer than broad **_incrassatus_** (p. 327)

— Gaster often relatively shorter, but always with ovipositor sheaths less exserted and less stout. Hind femora nearly or about 4 times as long as broad. Hind coxa fully twice, or slightly more than twice, as long as broad, its hind edge less strongly curved. Antenna with scape either reaching at most to lower edge of median ocellus, or else 4·30–4·75 times as long as broad; third funicular segment sometimes quadrate 163

163 Antenna (Fig. 392) with scape 4·30–4·75 times as long as broad, 0·85–0·92 length of eye, reaching middle of median ocellus, or even slightly above the vertex in undistorted specimens; outer surface of scape with some setae remote from the front edge **_palustris_** (p. 338)

— Antenna with scape 3·1–3·6 times as long as broad, 0·70–0·80 length of eye, reaching at most to lower edge of median ocellus; outer surface of scape without setae apart from those on the front edge 164

164 Antenna (Figs 393, 394) with third funicular segment quadrate or hardly longer than broad, sometimes even very slightly transverse; clava 2·0–2·5 times as long as broad 165

— Antenna (Figs 395, 398–400) with third funicular segment 1·35–2·25 times as long as broad; clava 2·2–4·0 times as long as broad 166

165 Antenna (Fig. 393) with first funicular segment 1·2–2·2 times as long as broad, second segment 1·2–1·7 times as long as broad. Body length 1·05–1·90 mm. (Small specimens may be very difficult to distinguish from *phragmitinus*.) .... **_pygmaeus_** (p. 338)

— Antenna (Fig. 394) with first funicular segment 1·0–1·3 times, second 1·0–1·3 times, as long as broad. Body length 0·7–1·3 mm .... **_phragmitinus_** (p. 340)

166 Antenna (Fig. 395) with clava nearly or just 4 times as long as broad, acute. Gaster (Fig. 397) subcircular, not or hardly longer than thorax, its apex forming a right or obtuse angle; last tergite at least twice as broad as long; ovipositor sheaths not projecting. Propodeum (Fig. 396) fully as long as or slightly longer than dorsellum, its hind corners sharp, nearly right-angled; median carina thin and sharp, not foveate at base. Small species, length 1·0–1·2 mm .... **_bruzzonis_** (p. 293)

— Antenna with clava 2·0–3·5 times as long as broad, less acute. Gaster ovate, usually distinctly longer than thorax, its apex acute; last tergite rarely as short as in above; ovipositor sheaths usually projecting at least very slightly. Propodeum tending to have hind corners less sharp; median carina usually with a small fovea at base 167

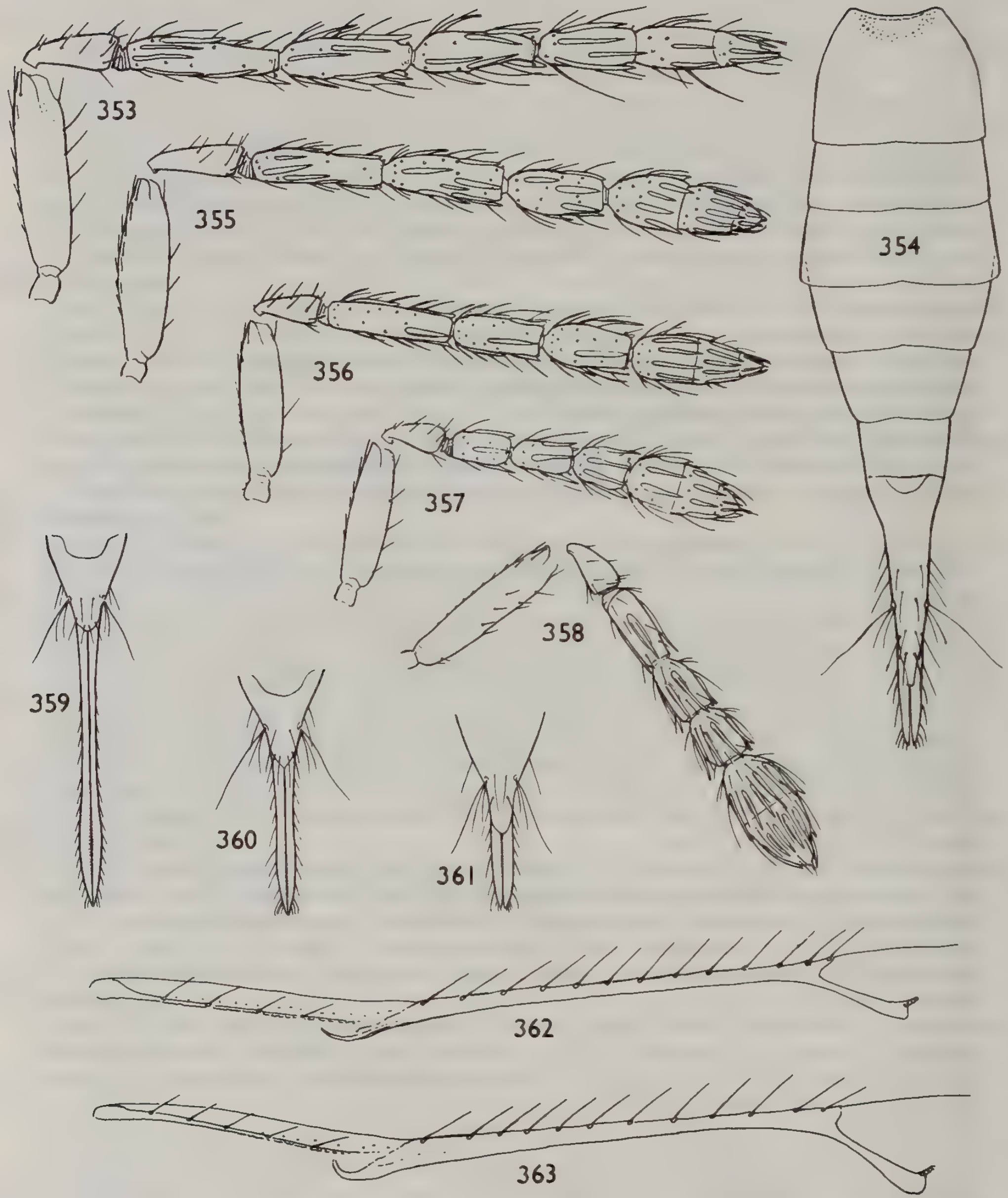
167 Forewing (Fig. 401) with stigmal vein very slender, its lower edge straight or virtually so, stigma poorly defined; speculum moderate-sized, wing surface just beyond it only moderately thickly pilose. Body length 1·25–1·90 mm .... **_tenuiradialis_** (p. 337)

— Forewing (Fig. 402): stigmal vein with lower edge slightly curved, stigma rather more distinct; speculum narrow and wing surface just beyond it very thickly pilose. Body length sometimes less than 1·25 mm 168

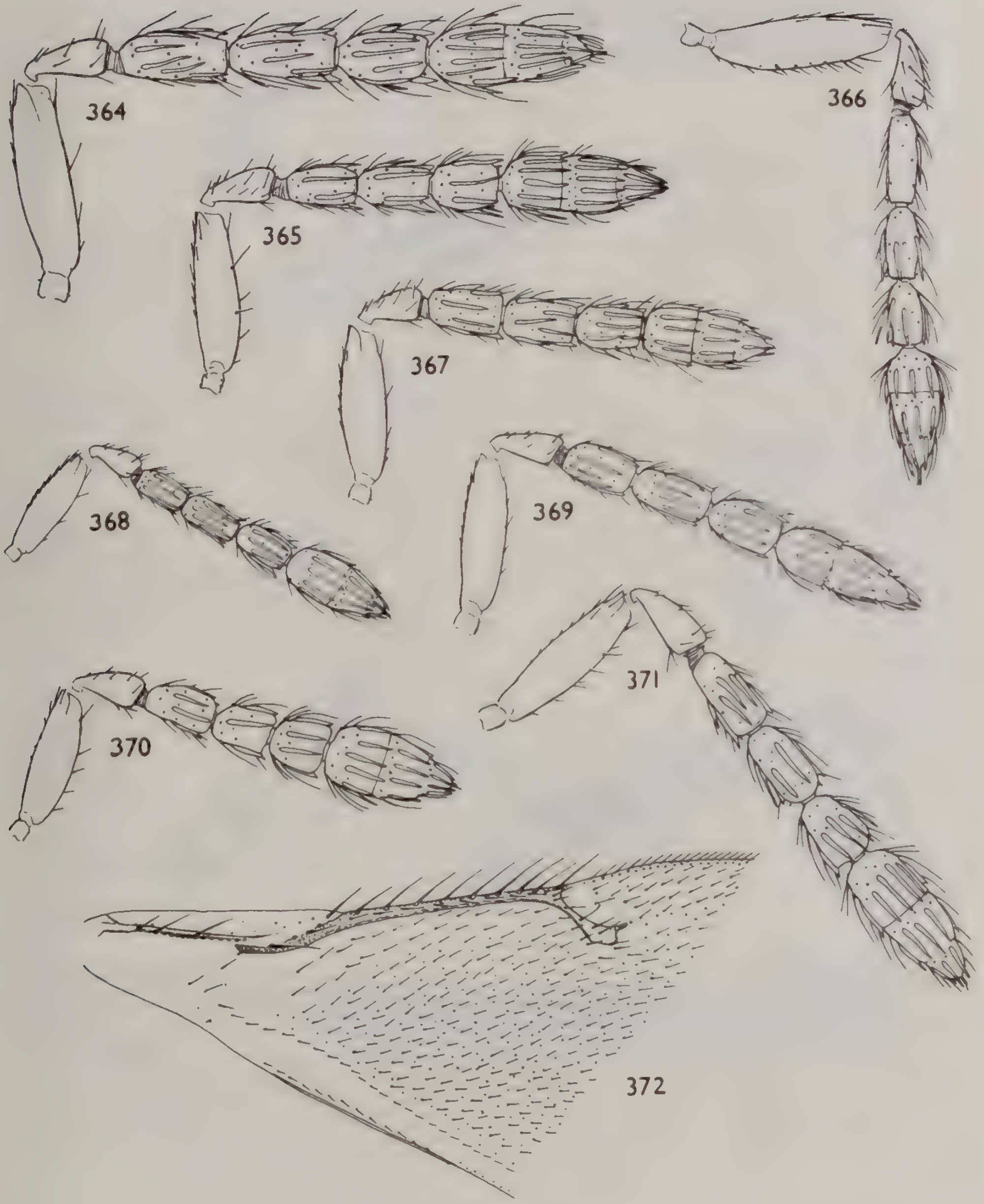
168 Marginal vein of forewing not or hardly longer than the costal cell. Mid and hind tibiae black with bases and tips narrowly pale. Fourth segment of hind tarsus as long as the basitarsus **_novatus_** (p. 337)

— Marginal vein of forewing distinctly longer than the costal cell. Tibiae most often testaceous, sometimes moderately broadly infuscate medially 169

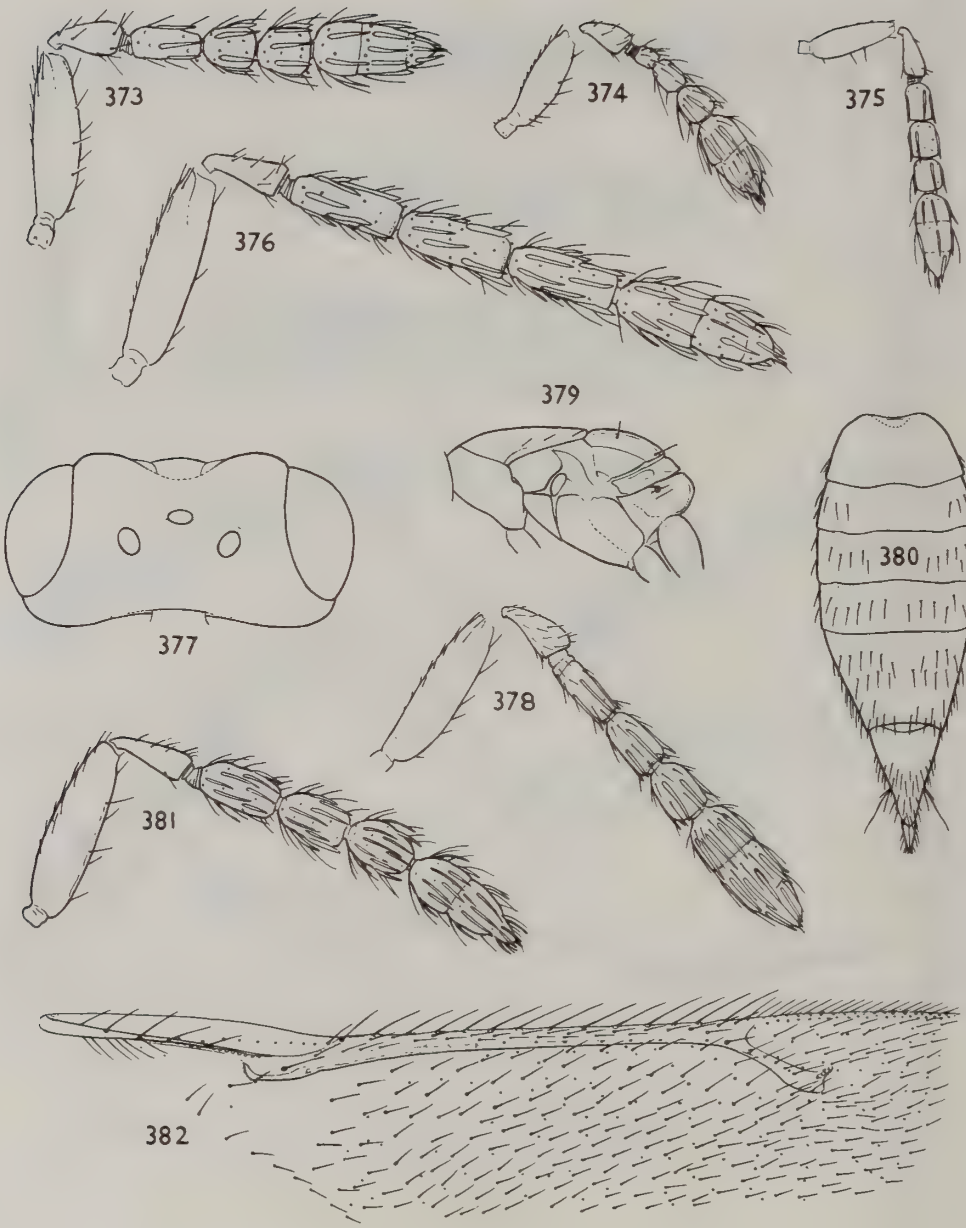
169 Body length 1·4–1·6 mm. Fourth segment of mid tarsus slightly shorter than the basitarsus, fourth segment of hind tarsus very slightly shorter than the basitarsus .... **_ligus_** (p. 335)



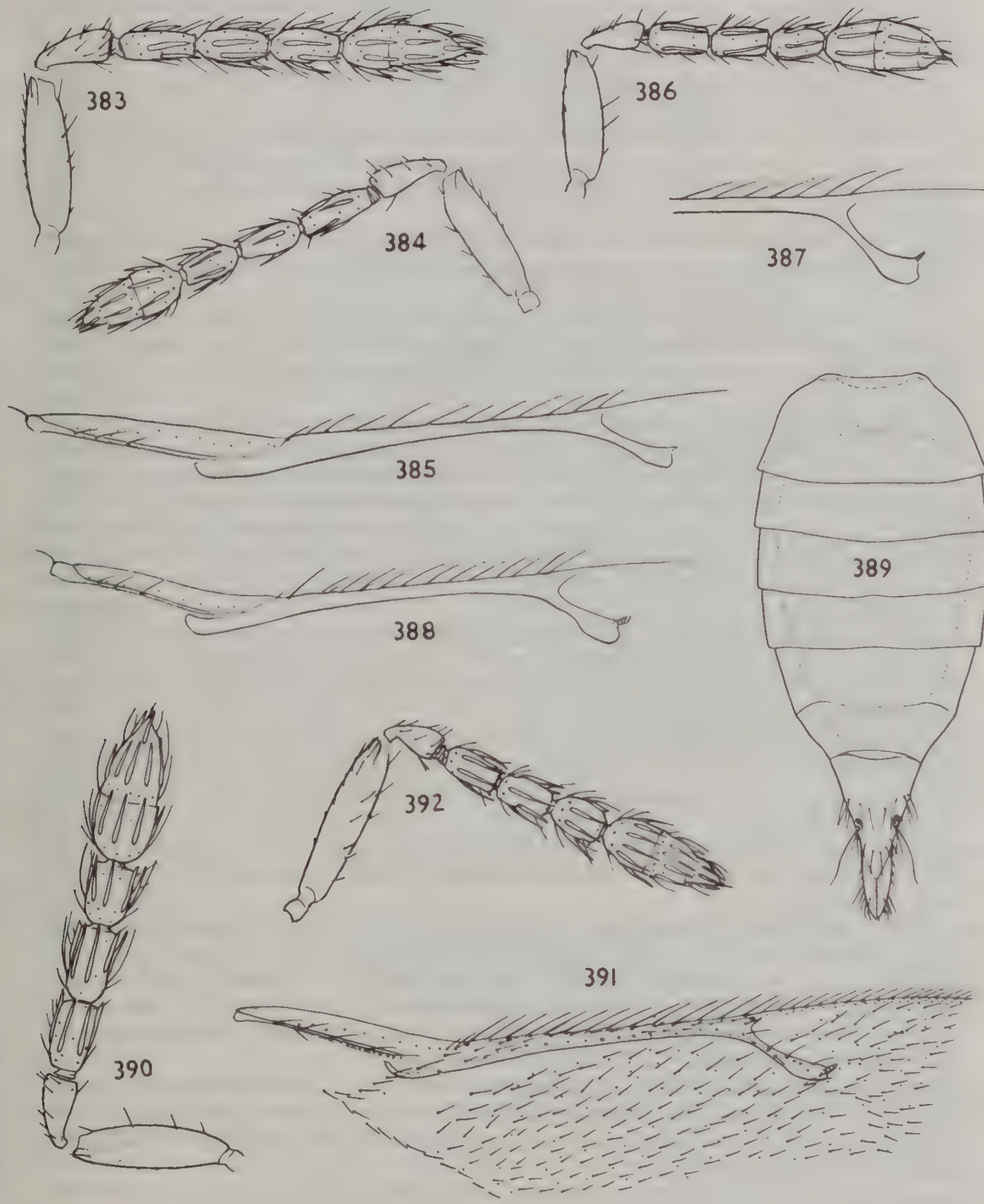
Figs 353–363 353, 354, *Aprostocetus* (*Aprostocetus*) *rubicola* sp. n. ♀: (353) antenna; (354) gaster. 355, *A.* (*A.*) *hedqvisti* sp. n. ♀, antenna. 356, *A.* (*A.*) *phloeophthori* Graham ♀, antenna. 357, *A.* (*A.*) *zoilus* (Walker) ♀, antenna. 358, *A.* (*A.*) *emesa* (Walker) ♀, antenna. 359, *A.* (*A.*) *zoilus* (Walker) ♀, last tergite and ovipositor. 360, *A.* (*A.*) *emesa* (Walker) ♀, last tergite and ovipositor. 361, *A.* (*A.*) *catius* (Walker) ♀, last tergite and ovipositor. 362, *A.* (*A.*) *zoilus* (Walker) ♀, forewing, anterior. 363, *A.* (*A.*) *emesa* (Walker) ♀, forewing, anterior.



Figs 364–372 364, *Aprostocetus* (*Aprostocetus*) *rufiscapus* sp. n. ♀, antenna. 365, *A.* (*A.*) *constrictus* sp. n. ♀, antenna. 366, *A.* (*A.*) *flavifrons* (Walker) ♀, antenna. 367, *A.* (*A.*) *coccidiphagus* sp. n. ♀, antenna. 368, *A.* (*A.*) *ceroplastae* (Girault) ♀, antenna, holotype. 369, *A.* (*A.*) *toddaliae* (Risbec) ♀, antenna, paralectotype. 370, *A.* (*A.*) *brachycerus* (Thomson) ♀, antenna. 371, *A.* (*A.*) *epilobii* sp. n. ♀, antenna. 372, *A.* (*A.*) *ceroplastae* (Girault) ♀, forewing, paratype.



Figs 373–382 373, *Aprostocetus* (*Aprostocetus*) *orestes* sp. n. ♀, antenna. 374, *A.* (*A.*) *subanellatus* Graham ♀, antenna. 375, *A.* (*A.*) *elegantulus* sp. n. ♀, antenna. 376, *A.* (*A.*) *arenarius* (Erdös) ♀, antenna. 377, 378, *A.* (*A.*) *escherichi* (Szelényi) ♀; (377) head, dorsal; (378) antenna, holotype. 379, *A.* (*A.*) *phineus* (Walker) ♀, thorax, profile. 380–382, *A.* (*A.*) *humilis* Graham ♀; (380) gaster; (381) antenna; (382) forewing.



Figs 383–392 383, *Aprostocetus* (*Aprostocetus*) *phineus* (Walker) ♀, antenna. 384, *A.* (*A.*) *debilitatus* sp. n. ♀, antenna. 385, *A.* (*A.*) *phineus* (Walker) ♀, forewing, anterior. 386, 387, *A.* (*A.*) *claviger* (Thomson) ♀; (386) antenna; (387) stigmal vein. 388, *A.* (*A.*) *stigmaticalis* sp. n. ♀, forewing, anterior. 389–391, *A.* (*A.*) *incrassatus* Graham ♀; (389) gaster; (390) antenna; (391) forewing. 392, *A.* (*A.*) *palustris* sp. n. ♀, antenna.

— Body length 0·9–1·3 mm. Fourth segment of both mid and hind tarsi as long as the basitarsus .... **gaus** (p. 337)

170 Antenna with third funicular segment not or hardly longer than broad; clava plus terminal spine 2·0–2·6 times as long as broad; scape not reaching median ocellus. Body black with at most mouth-edge, upper angle of mesopleuron, and dorsellum pale 171

— Antenna with third funicular segment distinctly longer than broad; clava plus spine 2·0–3·5 times as long as broad; scape sometimes reaching median ocellus. Body sometimes more extensively pale-marked than in above 175

171 Forewing (Fig. 403) with marginal vein only 2·5 times length of stigmal vein, and equal in length to the costal cell. Antenna similar to that of *pygmaeus* (Fig. 393) but with terminal spine of clava only about 0·66 length of third claval segment, with its apical seta about 0·5 the length of the spine .... ***A.*** (***A***) sp. 2

— Forewing with marginal vein 2·75–3·75 times length of stigmal vein, usually at least slightly longer than the costal cell. Antenna with terminal spine of clava sometimes relatively longer, or shorter 172

172 Gaster 2·3–2·4 times as long as broad, distinctly longer than head plus thorax. Antenna with combined length of pedicellus and flagellum slightly less than breadth of mesoscutum; first funicular segment much shorter than pedicellus. Forewing with costal cell about 12 times as long as broad .... ***A.*** (***A***) sp. 3

— Gaster usually less than twice as long as broad and not or hardly longer than head plus thorax; if somewhat more than twice as long as broad, then combined length of pedicellus and flagellum slightly greater than breadth of mesoscutum, and first funicular segment hardly shorter than the pedicellus. Costal cell of forewing sometimes relatively broader 173

173 Antenna (Fig. 434) with combined length of pedicellus and flagellum slightly greater than breadth of mesoscutum. Marginal vein of forewing 1·20–1·25 times as long as costal cell, the latter 10·0–10·5 times as long as broad. Gaster 1·8–2·3 times as long as broad. Species associated with *Salix* .... **abydenus** (p. 316)

— Antenna with combined length of pedicellus and flagellum about equal to, or slightly less than, the breadth of the mesoscutum. Marginal vein 1·0–1·2 times as long as costal cell, the latter 8·70–10·00 times as long as broad. Gaster 1·3–1·8 (–2·1) times as long as broad. Species associated with other host plants 174

174 Antenna (Fig. 449) with funicle slightly more slender; curved setae on second and third funicular segments and first and second segments of clava virtually as long as the segments themselves; first funicular segment 1·5–2·0 times as long as broad. Species associated with *Pinus* and *Picea* .... **micantulus** (p. 333)

— Antenna (Fig. 404) with funicle slightly stouter; curved setae of funicle and clava somewhat shorter; first funicular segment 1·4–1·6 times as long as broad. Species apparently associated with Umbelliferae .... **deplanatus** (p. 348)

175 Species with the following combination of characters: thorax not or very slightly longer than broad, distinctly broader than high; mid lobe of mesoscutum 1·25–1·80 times as broad as long; scutellum 1·5–2·0 times as broad as long; dorsellum 3·2–4·0 times as broad as long. Head slightly to distinctly narrower than mesoscutum. Tegulae (except in dark forms) citron-yellow or testaceous. Malar sulcus slightly to distinctly curved. Species apparently associated with *Quercus* spp. 176

— *Either* the thorax is distinctly longer than broad; *or* the mid lobe of the mesoscutum is less transverse; *or* the scutellum is relatively less transverse. Dorsellum usually less broad. Head sometimes as broad as or broader than the mesoscutum. Tegulae sometimes wholly black. Malar sulcus often straight 180

176 Antenna (Figs 405, 406) with combined length of pedicellus and flagellum 1·15–1·40 times breadth of mesoscutum; clava plus spine 3·0–3·5 times as long as broad. Gaster usually 2·7–4·0 times as long as broad, occasionally about 2·5 times in some very small and abnormal specimens. Spur of mid tibia 0·60–0·75 length of basitarsus. Head and thorax often extensively or mainly yellow to testaceous, sometimes black 177

— Antenna (Figs 407, 410) with combined length of pedicellus and flagellum about equal to breadth of mesoscutum; clava plus spine 2·00–2·75 times as long as broad. Gaster 1·1–2·4 times as long as broad. Spur of mid tibia 0·8–1·0 length of basitarsus. Head and thorax black, occasionally with mouth-edge, upper angle of mesopleuron, and dorsellum pale, rarely thorax more extensively pale 178

177 Body usually extensively to almost wholly yellow or testaceous; in some apparently conspecific

northern forms more or less extensively infuscate, rarely black with only mouth-edge, upper angle of mesopleuron, and dorsellum, pale .... ***balasi***(p. 310)

— Body black. Not otherwise distinguished from *balasi* (but see description of the male, which has antennae slightly different from those of *balasi*) .... ***csokakoensis***(p. 311)

178 Marginal vein of forewing about 2·6 times length of stigmal vein. Spur of mid tibia as long as the basitarsus. Gaster black. All femora proximally black .... ***holomelas***(p. 309)

— Marginal vein of forewing 3·0–3·2 times length of stigmal vein. Spur of mid tibia usually a little shorter than, occasionally as long as, the basitarsus. Gaster usually more or less yellow or testaceous proximally, occasionally wholly black. Femora usually yellow, rarely more or less infuscate proximally.. 179

179 Gaster slightly to distinctly longer than head plus thorax, its apex forming an acute angle, ovate to lanceolate-ovate, 1·6–2·4 times as long as broad. Antenna (Fig. 407) with clava 2·45–2·60 times as long as broad. Gaster testaceous at base, or more extensively, the pale and black areas tending to be less sharply delimited .... ***xanthomelas***(p. 309)

— Gaster about as long as head plus thorax, its apex forming an obtuse to very slightly acute angle, subcircular to ovate, 1·1–1·7 times as long as broad. Antenna (Fig. 410) with clava 2·0–2·5 times as long as broad. Gaster black; or with base yellow, sometimes more extensively yellow, the yellow and black areas usually sharply delimited .... ***domenichinii***(p. 307)

180 Longest seta of each cercus (Fig. 416) only about 1·6 length of the next longest, curved but not or hardly kinked. Body more or less yellow-marked, usually extensively so, sometimes almost wholly yellow. Antenna (Fig. 415) with clava at most slightly more than twice as long as broad. Marginal vein of forewing at most slightly longer than costal cell, often rather thick; speculum continued as a wedge-shaped bare strip below marginal vein and usually reaching the stigmal vein. Hosts on *Centaurea* spp. .... ***forsteri***(p. 343)

— Longest seta of each cercus (Figs 413, 423) nearly or quite twice length of the next longest, kinked in the middle. Body either black, or more or less yellow or tan. Antennal clava sometimes more elongate. Marginal vein of forewing at least slightly, often distinctly, longer than costal cell, usually relatively thin; speculum sometimes not continued below marginal vein. Hosts usually on trees, or herbaceous plants others than *Centaurea* 181

181 Forewing (Fig. 408) with stigma moderate-sized, separated by about 2·75 times its height from costal edge of wing; marginal vein fully 4 times length of stigmal vein. Mid lobe of mesoscutum very finely reticulate, areoles of the reticulation mostly about twice as long as broad; no median line. Antenna (Fig. 409) with first funicular segment very slightly shorter than the pedicellus; clava nearly 3 times as long as broad .... ***lituratus***(p. 334)

— Forewing with stigma small or very small, separated by at least 3 times its height from costal edge of wing; marginal vein sometimes relatively shorter. Mid lobe of mesoscutum excessively finely reticulate, its areoles mostly 3 or more times as long as broad. Antenna often with different structure 182

182 Body black, except gaster which is yellow to testaceous at least basally, sometimes mainly so (the yellow and black parts are normally sharply delimited). Tegulae usually fuscous to black, occasionally partly to wholly yellow. Hosts on *Quercus* spp. .... ***cerricola***(p. 306)

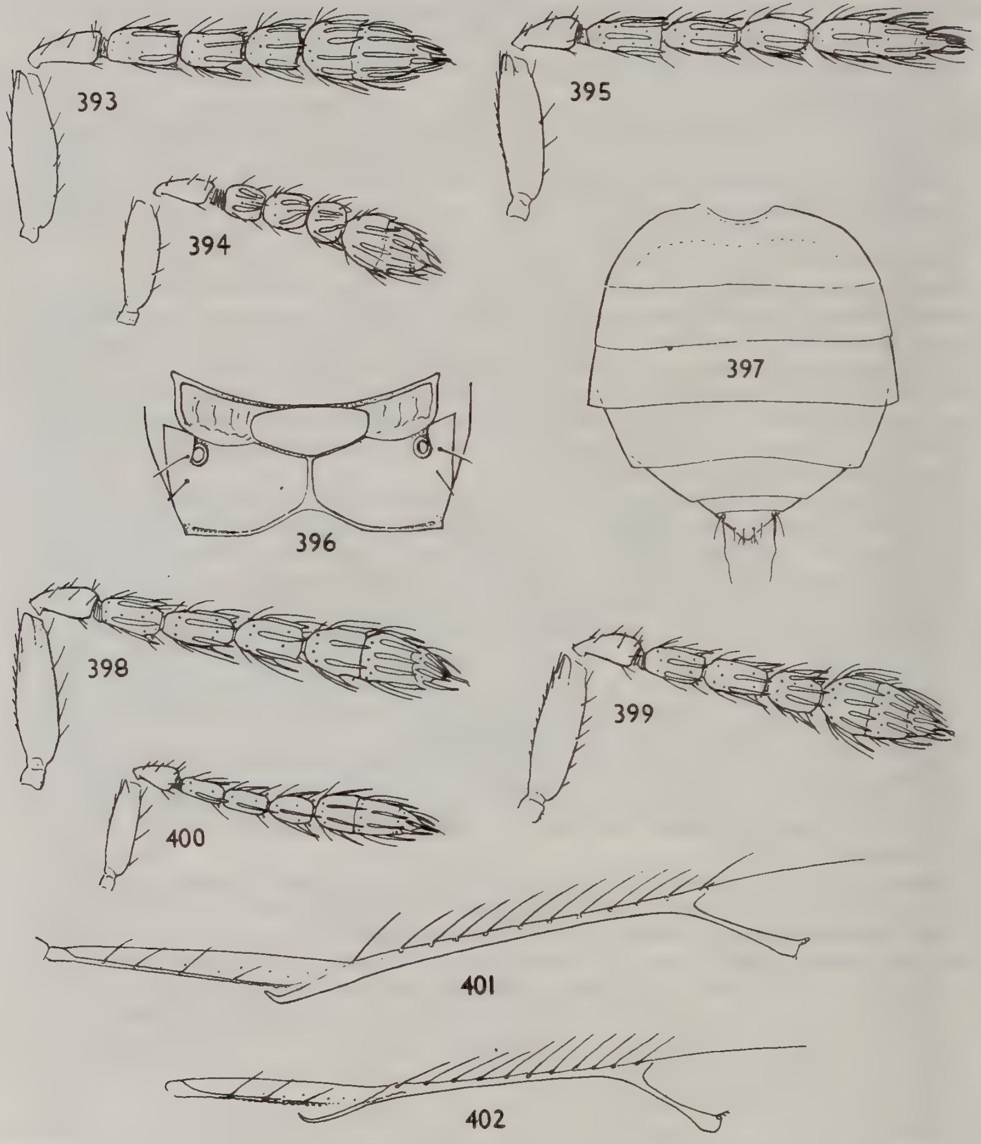
— *Either* the gaster is wholly black; *or* if more or less pale-marked, then the head and/or thorax also pale-marked. Tegulae often partly or wholly testaceous. Hosts often on other plants...... 183

183 Antenna (Fig. 420) with sutures of clava oblique, the clava short and slightly asymmetrical with its upper edge more strongly curved than the lower edge; flagellum proximally hardly stouter than the pedicellus, but thickening strongly distad. Body more or less yellow-marked. Species apparently associated with *Salix* spp. .... ***obliquus***(p. 314)

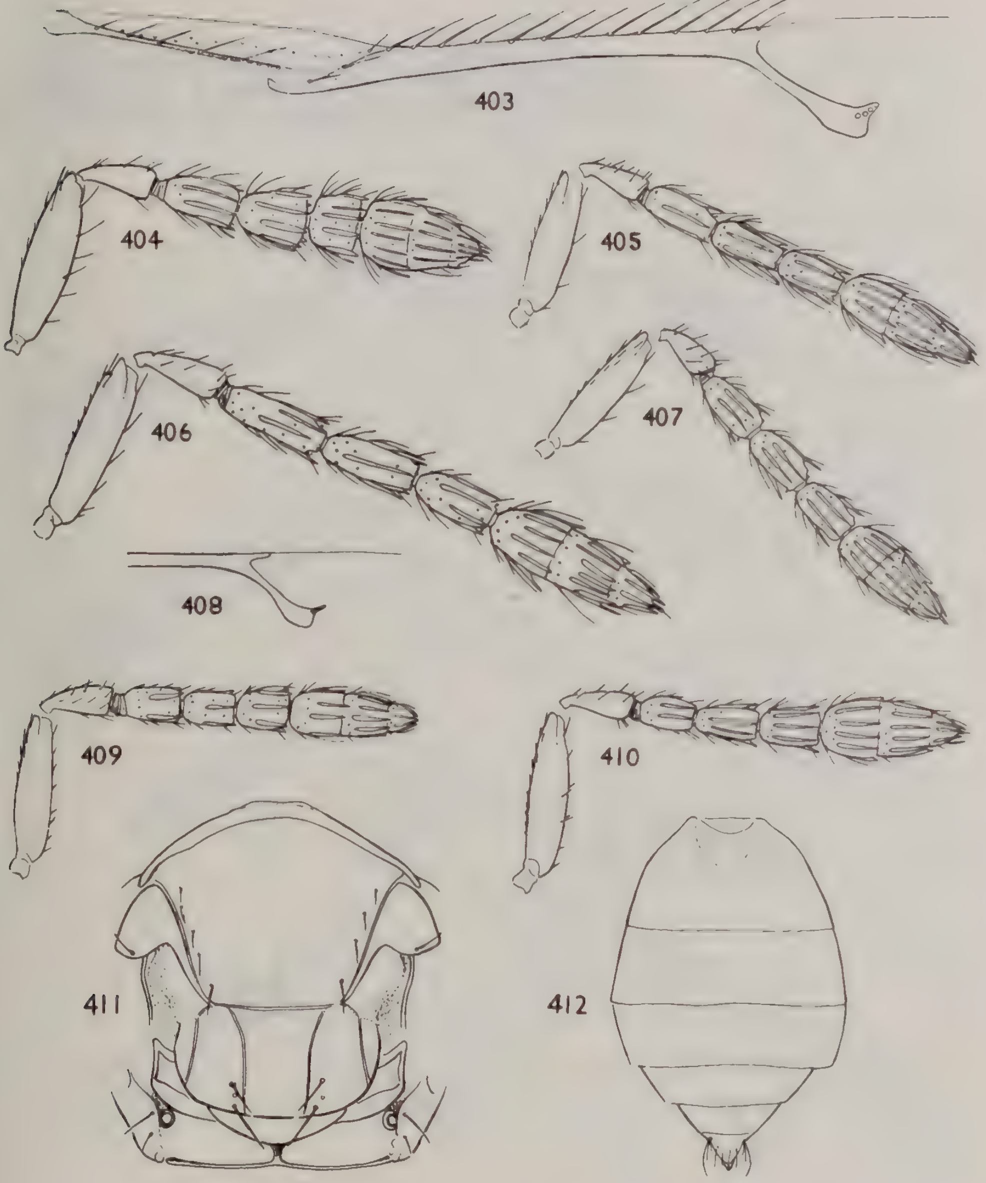
— Antenna with sutures of clava not oblique, the clava not asymmetrical and often relatively longer; flagellum sometimes differently shaped. Body with or without yellow markings........ 184

184 Antenna (Figs 421, 422) with flagellum more clavate, the clava 1·7–2·0 times as broad as the first funicular segment, the latter not or hardly stouter than the pedicellus; clava obtuse, 2·0–2·6 times as long as broad, its terminal spine less than 0·33 length of the third claval segment and usually concealed by sensilla, with apical seta of spine about as long as the spine; scape nearly or quite as long as an eye. Malar space 0·66–0·77 length of eye. Gaster 2·15–3·00 times as long as broad. Spur of mid tibia as long as basitarsus. Hosts on *Salix* spp. 185

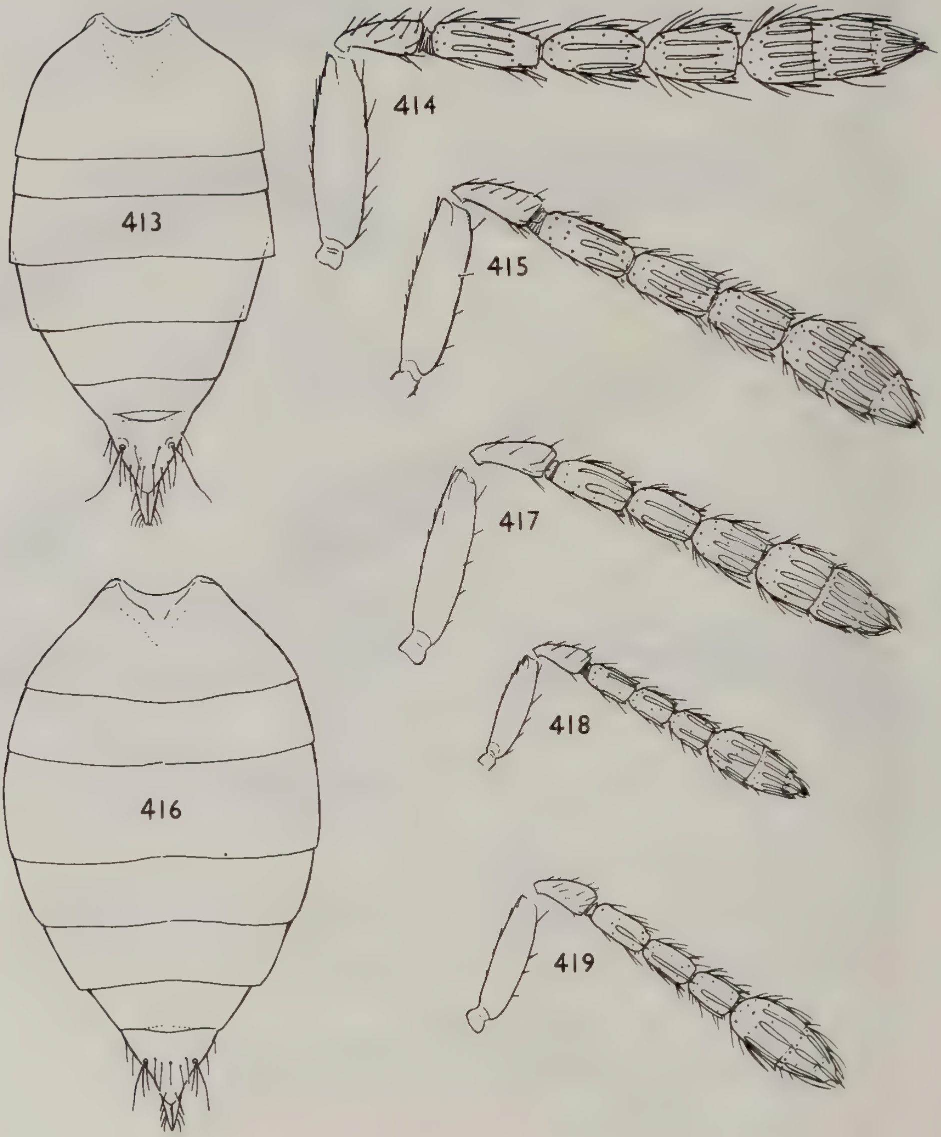
— Antenna with flagellum usually less clavate and the clava at most about 1·5 times as broad as the first funicular segment; if not then clava at least slightly pointed apically and its terminal spine relatively longer; scape nearly always distinctly shorter than an eye. Malar space 0·50–0·63 length of eye. Gaster 1·8–4·0 times as long as broad. Spur of mid tibia sometimes



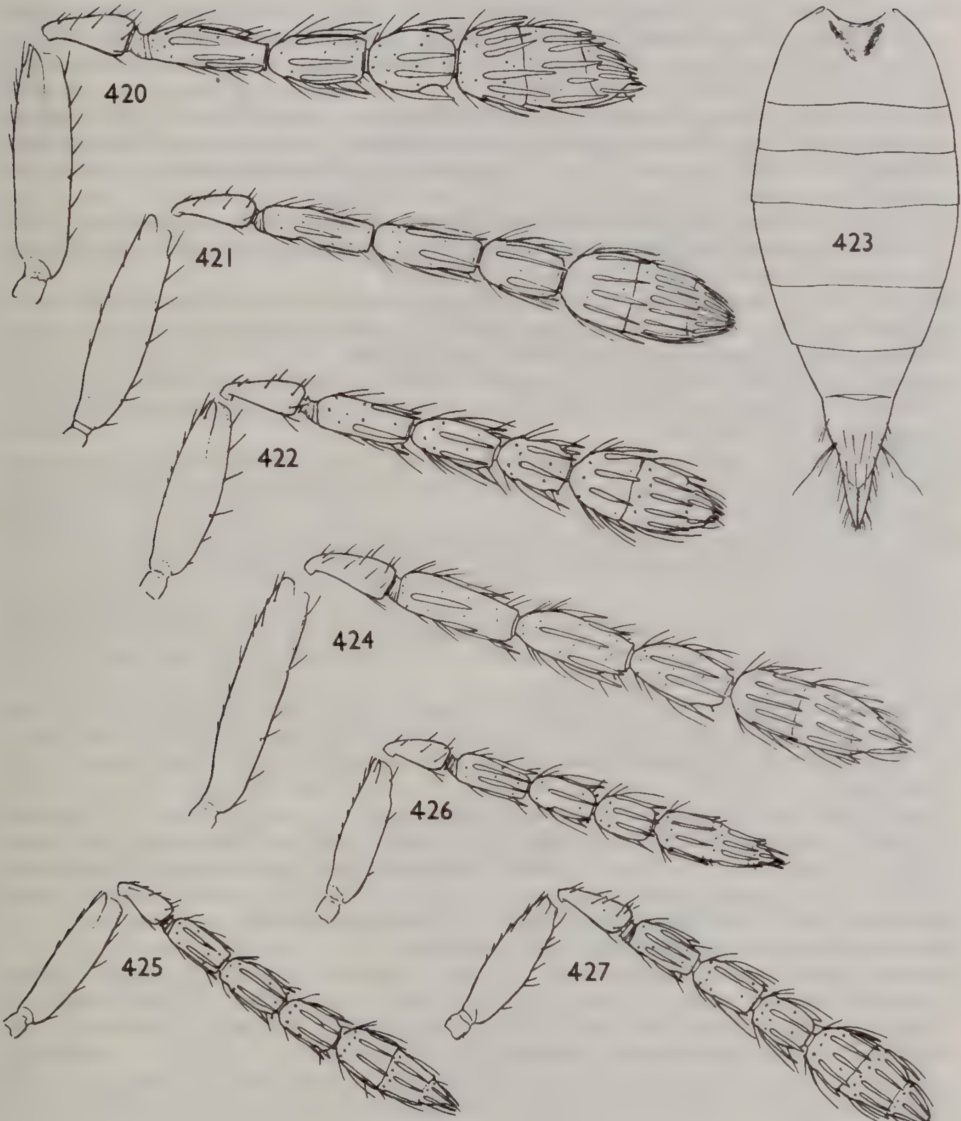
Figs 393–402 393, *Aprostocetus* (*Aprostocetus*) *pygmaeus* (Zetterstedt) ♀, antenna. 394, *A.* (*A.*) *phragmitinus* (Erdös) ♀, antenna. 395–397, *A.* (*A.*) *bruzzonis* (Masi) ♀; (395) antenna; (396) metanotum and propodeum; (397) gaster. 398, *A.* (*A.*) *ligus* (Walker) ♀, antenna. 399, *A.* (*A.*) *tenuiradialis* sp. n. ♀, antenna. 400, *A.* (*A.*) *gaus* (Walker) ♀, antenna. 401, *A.* (*A.*) *tenuiradialis* sp. n. ♀, forewing, anterior. 402, *A.* (*A.*) *gaus* (Walker) ♀, forewing, anterior.



igs 403–412 403, *Aprostocetus* (*Aprostocetus*) sp. 2 ♀, forewing, anterior. 404, *A.* (*A.*) *deplanatus* (Walker) ♀, antenna. 405, *A.* (*A.*) *balasi* (Erdös) ♀, antenna. 406, *A.* (*A.*) *csokakoensis* (Erdös) ♀, antenna. 407, *A.* (*A.*) *xanthomelas* sp. n. ♀, antenna. 408, 409, *A.* (*A.*) *lituratus* sp. n. ♀: (408) forewing, stigmal vein; (409) antenna. 410–412, *A.* (*A.*) *domenichinii* (Erdös) ♀: (410) antenna; (411) thorax; (412) gaster.



Figs 413–419 413, 414, *Aprostocetus* (*Aprostocetus*) *cerricola* (Erdös) ♀: (413) gaster; (414) antenna. 415, 416, *A.* (*A.*) *forsteri* (Walker) ♀: (415) antenna; (416) gaster. 417, 418, *A.* (*A.*) *viridinitens* sp. n. ♀: (417) antenna; (418) antenna (small specimen). 419, *A.* (*A.*) *artemisicola* sp. n. ♀, antenna.



Figs 420–427 420, *Aprostocetus* (*Aprostocetus*) *obliquus* sp. n. ♀, antenna. 421, *A.* (*A.*) *citrinus* (Förster) ♀, antenna. 422, 423, *A.* (*A.*) *tymber* (Walker) ♀: (422) antenna; (423) gaster. 424, *A.* (*A.*) *lycidas* (Walker) ♀, antenna. 425, *A.* (*A.*) *mimulus* sp. n. ♀, antenna. 426, *A.* (*A.*) *azoricus* sp. n. ♀, antenna. 427, *A.* (*A.*) *perfulvescens* sp. n. ♀, antenna.

shorter than basitarsus 186

185 Lateral ocelli larger; OOL 1·8–2·6 times the ocellar diameter. Body extensively marked with yellow and tan, sometimes mainly of these colours .... ***citrinus***(p. 312)

— Lateral ocelli smaller; OOL nearly 3 times the ocellar diameter. Body usually black with mouth-edge, upper angle of mesopleuron, and dorsellum testaceous, occasionally with moderately extensive reddish or tan markings .... ***tymber***(p. 313)

186 Spur of mid tibia 0·65–0·70 length of basitarsus. Gaster ovate, 1·7–2·0 times as long as broad. Antenna (Fig. 424) with scape 0·90–0·95 length of eye, reaching level of middle of median ocellus, or even vertex; clava 3·00–3·35 times as long as broad. Body usually black, rarely somewhat reddish-marked. Host on *Fagus* sp. .... ***lycidas***(p. 327)

— Spur of mid tibia usually relatively longer, if not then gaster lanceolate and 2·5–4·0 times as long as broad. Antennal scape usually shorter and usually reaching at most level of lower edge of the ocellus; clava sometimes relatively shorter. Body sometimes extensively yellow- or reddish-marked 187

187 Anterior setae of scutellum slightly less than twice as far from front edge of scutellum as from the posterior setae. Small species, length 1·2–1·5 mm. Legs mainly yellowish, including fore coxae partly to mainly. Body more or less pale-marked 188

— Anterior setae of scutellum twice or more than twice as far from front edge of scutellum as from the posterior setae, except in some *gaus*, in which the body is black without pale markings. Species often relatively larger. Legs often relatively darker 189

188 Antenna (Figs. 426) with clava nearly or quite 3 times as long as broad; combined length of pedicellus and flagellum 1·18–1·22 times breadth of mesoscutum. Spur of mid tibia fully as long as basitarsus. (Azores) .... ***azoricus***(p. 322)

— Antenna (Fig. 425) with clava 2·5–2·6 times as long as broad; combined length of pedicellus and flagellum 1·15–1·17 times breadth of mesoscutum. Spur of mid tibia 0·80–0·85 length of basitarsus. (Greece) .... ***mimulus***(p. 322)

189 Mainly to almost entirely testaceous species, with thorax only 1·2–1·3 times as long as broad. Gaster 1·4–2·1 times as long as broad. Antenna (Fig. 427) with clava 2·5–2·8 times as long as broad. (Greece) .... ***perfulvescens***(p. 324)

— Thorax usually 1·4–1·5 times as long as broad, if slightly shorter than this then body mainly to wholly black (as in most species in this section, a few being extensively testaceous). The other characters sometimes different 190

190 Antenna (Fig. 428) with clava 2·9–3·5 times as long as broad; pedicellus slender, 2·2–2·8 times as long as broad. Head in front view at most 1·1 times as broad as high but when slightly collapsed (as is often the case) then as high as broad. Gaster 1·6–2·8 times as long as broad. Body black, usually with a variable extent of tan or reddish markings. Spur of mid tibia nearly or just as long as basitarsus. Hosts on *Salix* .... ***metra***(p. 315)

— Antennal clava sometimes relatively shorter; if about 3 times as long as broad then head distinctly broader than high even when slightly collapsed; pedicellus usually relatively shorter 191

191 Antenna with pedicellus at least 2·5 times as long as broad in dorsal view 192

— Antenna with pedicellus 1·7–2·2 times as long as broad 193

192 Antenna (Fig. 429) with pedicellus 2·5–3·0 times as long as broad, slightly longer than first funicular segment, bearing numerous setae; funicle proximally only slightly stouter than pedicellus. Gaster ovate, hardly twice as long as broad. Body black with at most mouth-edge and upper angle of mesopleuron testaceous; tegulae black .... ***lycidoides***(p. 329)

— *Either* antennal pedicellus approximately 2·5 times as long as broad but *not* longer than first funicular segment; *or* funicle proximally much stouter than pedicellus; *or* gaster more than twice as long as broad. Body sometimes more extensively pale-marked; tegulae often partly to wholly testaceous 193

193 Species with following combination of characters: antennal scape (Fig. 392) reaching at least to middle of median ocellus, in specimens with undistorted head reaching even slightly above level of vertex, its outer surface with a few setae well inside the front (ventral) edge; first funicular segment not stouter, often a little shorter, than the pedicellus; combined length of pedicellus and flagellum hardly greater than breadth of mesoscutum; fourth segment of mid and hind tarsi stout, as long as the basitarsus. Body length 1·4–1·8 mm .... ***palustris***(p. 338)

— Antennal scape not reaching above lower edge of median ocellus except in *perone*, *acron*, *aethiops* and *rufescens*, in which the outer surface of the scape has no setae inside the front edge, the first funicular segment is at least slightly stouter than the pedicellus and sometimes a little longer than it, the combined length of pedicellus and flagellum sometimes distinctly greater than the breadth of the mesoscutum, and body length 1·60–2·45 mm 194

194 Antenna (Fig. 430) with claval spine 0·50–0·66 length of third claval segment; scape reaching level of middle or top of median ocellus; clava 2·9–3·0 times as long as broad. Spur of mid tibia as long as the basitarsus. Body black with at most upper angle of mesopleuron and orsellum testaceous 195

— *Either* the claval spine is shorter relative to the third claval segment; *or* the scape reaches at most to lower edge of median ocellus; *or* the spur of mid tibia is slightly shorter than the basitarsus; *or* the body is more extensively pale-marked (sometimes two or more of these characters are present simulaneously 196

195 Gaster 1·9–2·3 times as long as broad. Antenna (Fig. 430) with combined length of pedicellus and flagellum 1·08–1·15 times breadth of mesoscutum; apical seta of claval spine about 0·6 length of the spine. Head barely as broad as the mesoscutum .... ***perone***(p. 321)

— Gaster nearly 3 times as long as broad, strongly acute and acuminate. Antenna with combined length of pedicellus and flagellum 1·25–1·30 times breadth of mesoscutum; apical seta of claval spine about 0·33 length of the spine. Head slightly broader than the mesoscutum ***acron***(p. 321)

196 Antenna (Fig. 431) with funicle about 1·5 times as broad as the pedicellus in dorsal view, filiform, its segments equal or virtually equal in length; claval spine about 0·5 length of third claval segment, the clava 2·7–2·9 times as long as broad; combined length of pedicellus and flagellum not or hardly greater than breadth of mesoscutum. Gaster 1·6–2·0 times as long as broad. Body blackwith at most dorsellum and upper angle of mesopleuron testaceous ***capitigenae***(p. 331)

— Antennal funicle usually less stout proximally and tending to thicken at least slightly distad, its segments most often decreasing somewhat in length; claval spine usually shorter; combined length of pedicellus and flagellum sometimes greater than breadth of mesoscutum. Gaster sometimes more elongate. Body sometimes more extensively pale-marked 197

197 Gaster lanceolate, 3·00–4·25 times as long as broad, twice or slightly more than twice as long as thorax. Spur of mid tibia 0·73–0·80 length of basitarsus 198

— Gaster usually distinctly less than 3 times as long as broad but if as much as 3 times (some *rubi*, *trjapitzini* and *agevilleae*) then not quite twice as long as thorax. Spur of mid tibia (except in *rubi*) 0·9–1·0 length of basitarsus 199

198 Hosts leaf-mining Lepidoptera and Coleoptera on *Populus* spp. Antenna (Fig. 435): funicle proximally not stouter than pedicellus, its segments relatively longer, the first and second each about twice as long as broad. Spur of mid tibia about 0·8 length of basitarsus ***femoralis***(p. 318)

— Host Diptera: Cecidomyiidae on *Tilia*. Antennal funicle proximally slightly stouter than the pedicellus, its segments realtively shorter, the first and second not quite twice as long as broad. Spur of mid tibia 0·73 length of basitarsus .... ***tilicola***(p. 320)

199 Antenna (Fig. 433) with clava 3·2–3·7 times as long as broad. Gaster lanceolate, 2·3–3·4 (–4) times as long as broad; last tergite 1·0–1·4 times as long as broad. Body usually black, occasionally head and thorax somewhat tan-marked. All coxae black at least basally, usually mainly to entirely so; femora usually more or less infuscate. Spur of mid tibia 0·80–0·87 length of basitarsus 200

— In most species either the antennal clava, or the gaster, relatively shorter than in the above; if not, then last tergite of gaster at least slightly broader than long, head and thorax reddish-marked, and all coxae usually wholly pale 201

200 Host *Lasioptera rubi* on *Rubus*. Coxae black in dark forms but in pale forms the fore and mid coxae are partly to wholly yellow, hind coxae yellow apically .... ***rubi***(p. 319)

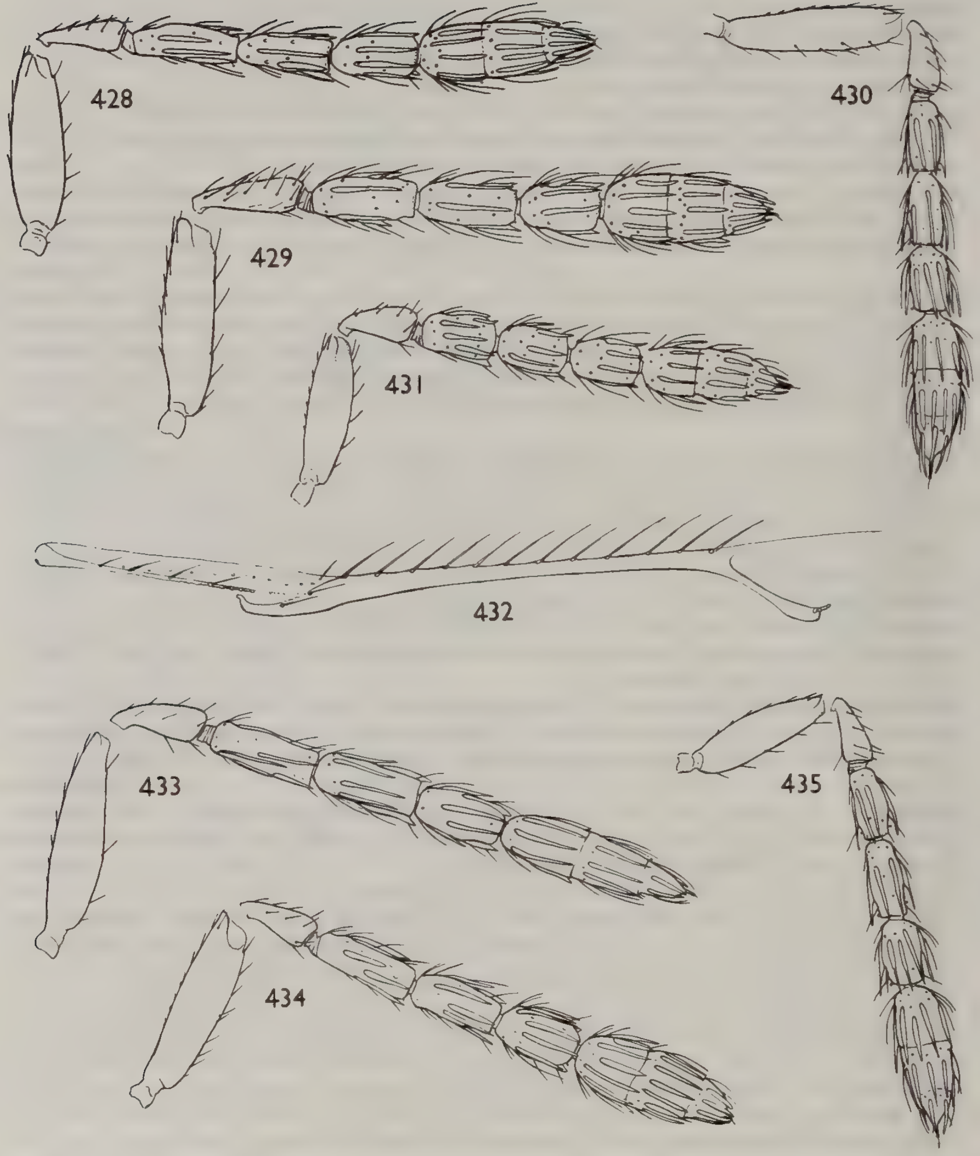
— Host *Didymomyia tiliacea* on *Tilia* sp. Legs yellow, with fore coxae at base, and about proximal half of hind coxae, black; hind femora infuscate over about proximal half .... ***tiliaceae***(p. 320)

201 At least some parts of the body, in addition to the mouth-edge, upper angle of mesopleuron and dorsellum, reddish, tan, or yellowish 202

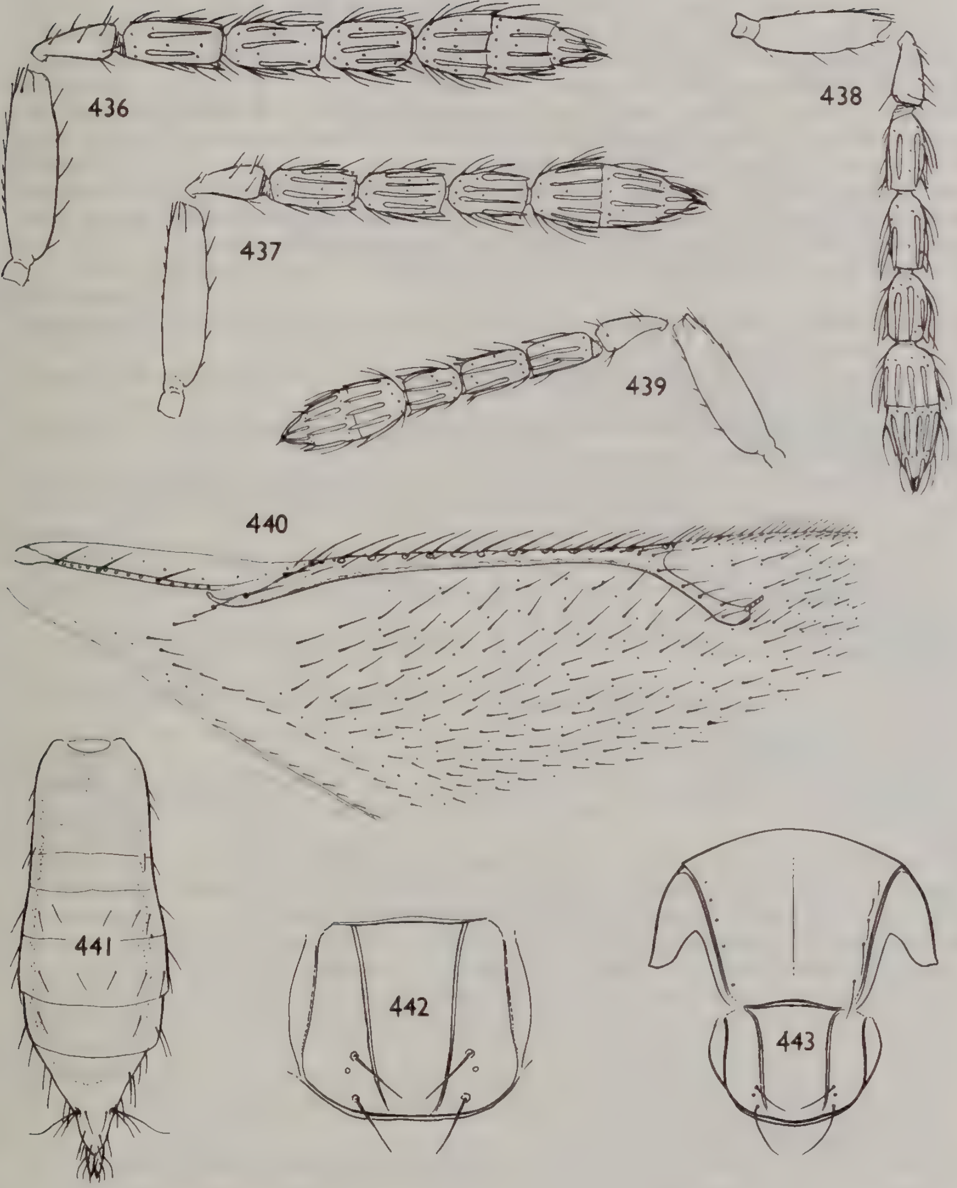
— Body (in mature specimens) black with at most mouth-edge, upper angle of mesopleuron and dorsellum, pale 204

202 Antenna with combined length of pedicellus and flagellum approximately equal to breadth of mesoscutum. Host on *Picea* sp. .... ***agevilleae***(p. 326)

— Antenna with combined length of pedicellus and flagellum 1·1–1·3 times breadth of mesoscutum 203



Figs 428–435 428, *Aprostocetus* (*Aprostocetus*) *metra* (Walker) ♀, antenna. 429, *A.* (*A.*) *lycidoides* sp. n. ♀, antenna. 430, *A.* (*A.*) *perone* sp. n. ♀, antenna. 431, *A.* (*A.*) *capitigenae* sp. n. ♀, antenna. 432, *A.* (*A.*) *perone* sp. n. ♀, forewing, anterior. 433, *A.* (*A.*) *rubi* sp. n. ♀, antenna. 434, *A.* (*A.*) *abydenus* (Walker) ♀, antenna. 435, *A.* (*A.*) *femoralis* (Sundby) ♀, antenna.



Figs 436–443 436, *Aprostocetus* (*Aprostocetus*) *rufescens* sp. n. ♀, antenna. 437, *A.* (*A.*) *epilobiellus* sp. n. ♀, antenna. 438, *A.* (*A.*) *trjapitzini* (Kostjukov) ♀, antenna. 439–441, *A.* (*A.*) *leptoneuros* (Ratzeburg) lectotype ♀: (439) left antenna; (440) forewing; (441) gaster. 442, *A.* (*A.*) *culminis* sp. n. ♀, scutellum. 443, *A.* (*A.*) *aethiops* (Zetterstedt) ♀, scutellum.

203 Antenna (Fig. 434) with clava 2·2–2·6 times as long as broad; claval spine about 0·35 length of third claval segment, its apical seta about 0·66 length of spine; scape reaching at most to level of lower edge of median ocellus. Spur of mid tibia 0·90–0·97 length of basitarsus. Body colour often as in *rufescens* but varying to wholly black. Hosts on *Salix* spp. ...... ***abydenus***(p. 316)

— Antenna (Fig. 436) with clava 2·65–3·50 times as long as broad; claval spine about 0·5 length of third claval segment, its apical seta about 0·5 length of the spine; scape reaching level of middle of median ocellus, or even slightly above this. Spur of mid tibia 0·75–0·80 length of basitarsus. Head and thorax partly to mainly reddish yellow; gaster extensively infuscate, sometimes wholly black. Host on *Quercus pubescens* ...... ***rufescens***(p. 323)

204 Antenna with clava 3 times as long as broad or even slightly more, somewhat longer than the combined lengths of funicular segments two and three; first funicular segment slightly longer than pedicellus. Gaster 1·7–2·0 times as long as broad ...... ***myrsus***(p. 333)

— Antennal clava *either* at most 2·8 times as long as broad, *or* not longer than combined lengths of funicular segments two and three; first funicular segment sometimes slightly shorter than pedicellus. Gaster sometimes relatively longer, or shorter, than in the above 205

205 Spur of mid tibia 0·73–0·80 length of basitarsus. Gaster 3·00–4·25 times as long as broad ***femoralis***(p. 318)

— Spur of mid tibia 0·9–1·0 length of basitarsus. Gaster (except in some *trjapitzini* and *agevilleae*) at most 2·6 times as long as broad 206

206 Antenna with combined length of pedicellus and flagellum 1·1–1·2 times breadth of mesoscutum 207

— Antenna with combined length of pedicellus and flagellum approximately equal to, or hardly greater than, the breadth of the mesoscutum 211

207 Gaster lanceolate, 2·3–3·0 times as long as broad. All coxae black, femora partly to mainly black, hind tibiae often more or less infuscate, sometimes also the mid tibiae. Hosts: Hemiptera: Coccoidea on *Picea* spp. and *Pinus* spp. ...... ***trjapitzini***(p. 326)

— Gaster normally 1·80–2·15 times as long as broad, occasionally up to 2·3 times in some *abydenus* which have tibiae nearly always pale, sometimes also one or more pairs of femora. Hosts: Diptera: Cecidomyiidae on other plants 208

208 Tegulae black. Hind tibiae broadly infuscate or mainly black; mid tibiae sometimes more or less infuscate 209

— Tegulae testaceous, sometimes fuscous posteriorly. Hind tibiae usually yellow or testaceous, rarely very weakly infuscate medially 210

209 Marginal vein 2·9–3·8 times length of stigmal vein. Host on *Salix* ...... ***abydenus***(p. 316)

— Marginal vein 3·75–4·35 times length of stigmal vein. Host on *Trifolium* spp. ...... ***aquilus***(p. 320)

210 Antenna (Fig. 437) with clava 2·8–3·0 times length of stigmal vein. Host on *Chamaenerion* spp. ***epilobiellus***(p. 320)

— Antenna (Fig. 434) with clava 2·2–2·6 times as long as broad. Hosts on *Salix* spp. ***abydenus***(p. 316)

211 Gaster (Fig. 441) about 2·6 times as long as broad. Antenna (Fig. 439) with pedicellus slightly longer than first funicular segment. Parasite of Hemiptera: Coccoidea ...... ***leptoneuros***(p. 324)

— *Either* the gaster is relatively shorter; *or* the pedicellus is at most as long as the first funicular segment. Parasites usually of Diptera: Cecidomyiidae, occasionally of Acari: Eriophidae...... 212

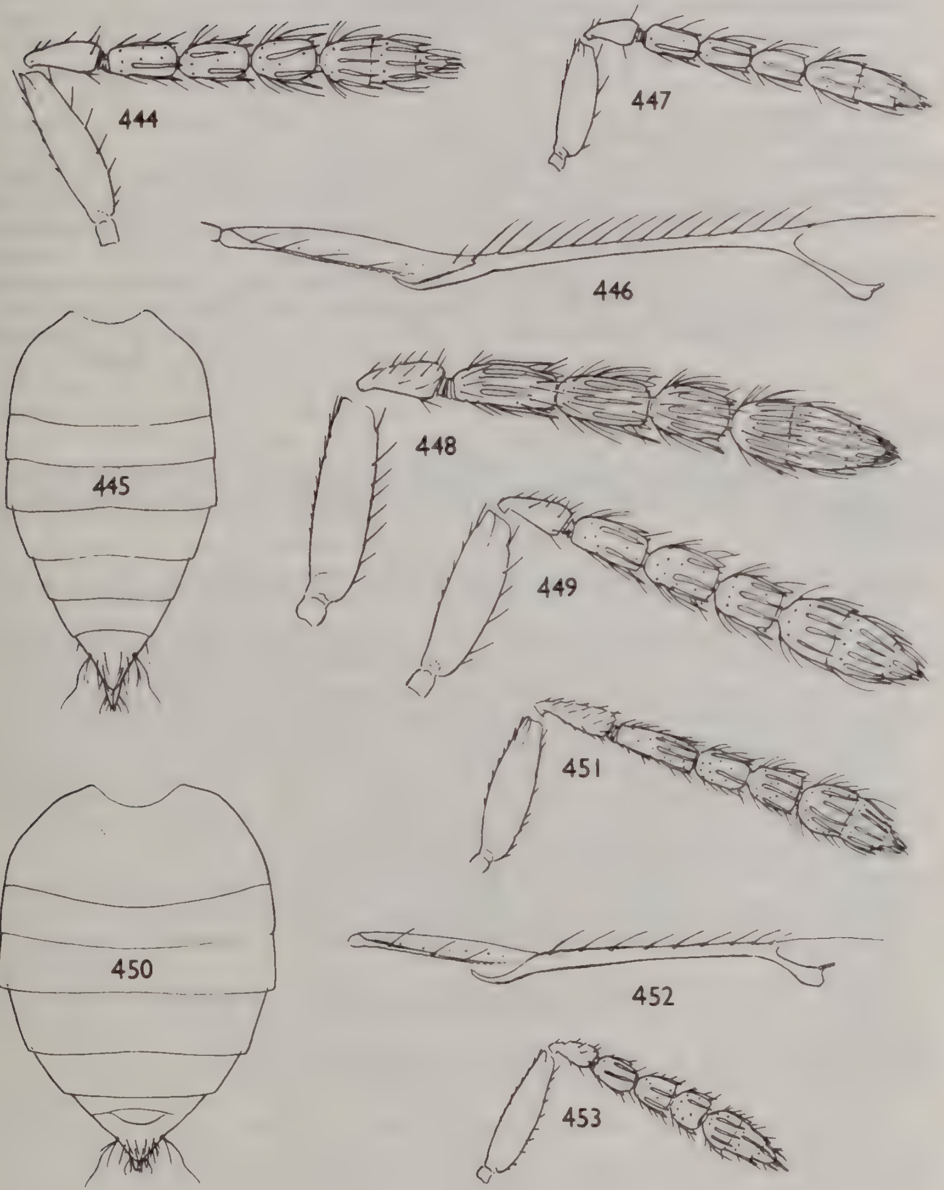
212 Legs testaceous with hind coxae, mid and fore coxae partly, and hind femora, blackish or fuscous. Spur of mid tibia as long as the basitarsus. Gaster lanceolate, 2·3–3·1 times as long as broad. Host: *Agevillea abietis* ...... ***agevilleae*** (p. 326)

— All coxae, and all femora at least broadly in their basal part, fuscous to black. Spur of mid tibiae often slightly shorter than basitarsus. Gaster sometimes relatively shorter. Species usually with hosts on plants other than *Abies* 213

213 Submedian lines of scutellum (Fig. 442) not or hardly nearer to sublateral lines than to each other, converging strongly caudad, enclosing a space 2·0–2·5 times as long as broad. Tegulae black. Otherwise resembles *aethiops* ...... ***culminis***(p. 331)

— Submedian lines of scutellum (Fig. 443) slightly to quite distinctly nearer to sublateral lines than to each other, tending to converge less strongly caudad, enclosing a space 1·6–2·0 times (but rarely as much as 2·0 times) as long as broad. Tegulae most often at least partly testaceous 214

214 Antennal clava (Figs 444, 447) with terminal spine longer, about 0·5 length of third claval segment, its apical seta 0·3–0·4 as long as the spine. Head normally as broad as or slightly broader than the mesoscutum. Body length 1·00–1·75 mm. Mid lobe of mesoscutum with (2–) 3–5 adnotaular setae on each side 215



Figs 444–453 444–446, *Aprostocetus* (*Aprostocetus*) *pallipes* (Dalman) ♀: (444) antenna; (445) gaster; (446) forewing, anterior. 447, *A.* (*A.*) *eriophyes* (Taylor) ♀, antenna. 448, *A.* (*A.*) *aethiops* (Zetterstedt) ♀, antenna. 449, 450, *A.* (*A.*) *micantulus* (Thomson) ♀; (449) antenna; (450) gaster. 451, 452, *A.* (*A.*) *glandicola* sp. n. ♀; (451) antenna; (452) forewing, anterior. 453, *Xenaprostocetus pungens* sp. n. ♀, antenna.

— Antennal clava (Figs 448, 449) with terminal spine shorter, about 0·33 length of third claval segment, its apical seta varying from 0·65 to as long as the spine. Head usually slightly less broad than the mesoscutum, occasionally as broad. Body length 1·2–2·5 mm. Mid lobe of mesoscutum with 3–8 adnotaular setae on each side 216

215 Hosts: Diptera: Cecidomyiidae on *Betula* spp. and *Salix* spp. .... ***pallipes***(p. 332)

— Hosts: Acari: Eriophyidae on *Ribes* sp. and *Corylus* sp. .... ***eriophyes***(p. 332)

216 Gaster lanceolate, 2·5–2·8 times as long as broad. Fourth segment (not counting pretarsus) of hind tarsus virtually as long as the basitarsus. Host: *Syndiplosis petioli* on *Populus* spp. ***A. (A.)*** sp.

— Gaster ovate to lanceolate, 1·3–2·5 times as long as broad. Fourth segment of hind tarsus about 0·75 length of basitarsus. Hosts on other plants 217

217 Gaster 1·7–2·5 times as long as broad (much like that of *pallipes*, Fig. 445), slightly to considerably longer than head plus thorax. Body length (1·3–) 1·7–2·5 mm. Mid lobe of mesoscutum with 4–8 adnotaular setae on each side. Species associated with deciduous trees ***aethiops***(p. 329)

— Gaster (Fig. 450) 1·3–1·8 (–2·1) times as long as broad, from slightly shorter than, to slightly longer than head plus thorax. Mid lobe of mesoscutum with 3–5 adnotaular setae on each side. Species associated with *Pinus* spp. .... ***micantulus***(p. 333)

Males

Eighty species whose males are unknown or doubtful are omitted from this key. Males of a few other species are included, although their females have not been definitely correlated, as this may help with their eventual recognition.

1 Antenna (Figs 454–459): segments of funicle and clava without compact subbasal whorls of long dark setae 2

— Antenna (Figs 460–541): segments of funicle with compact subbasal whorls of dark setae which reach at least nearly to the apex of the segment which bears them, but usually beyond (often far beyond) the apex; clava most often with some partial whorls of similar setae 7

2 Antenna (Fig. 454) with scape strongly swollen, reaching far above the vertex; pedicellus about 3 times as long as broad, with numerous setae; clava short, at most twice as long as broad; funicular segments tending to decrease in length distad. Mesoscutum not very shiny, its reticulation very slightly raised. Body mainly testaceous .... ***phillyreae***(p. 256)

— If the antennal scape is strongly swollen, then the pedicellus is relatively shorter with fewer setae, whilst the other characters do not all agree with the above 3

3 Antenna (Fig. 456) with first funicular segment much shorter than the others, which are obviously longer than broad; scape slender, with a short ventral plaque which is situated wholly in the upper half. Body non-metallic, black with at most the gaster more or less yellow proximally .... ***domenichinii***(p. 307)

— Antenna *either* with first funicular segment as long as the others; *or* having scape broader, with a longer ventral plaque. Body usually at least weakly metallic; head and/or thorax sometimes pale-marked 4

4 Spur of mid tibia weak, its length not greater than the breadth of the tibia. Antenna (Fig. 457): clava thickly clothed with pale setae. Antenna and legs mainly yellow in pale forms but antenna and femora more or less infuscate in dark forms; head sometimes partly yellow; thorax not pale-marked .... ***clavicornis***(p. 257)

— Spur of mid tibia stronger, its length distinctly greater than the breadth of the tibia. Antennal clava not thickly clothed with pale setae. Antenna testaceous to brownish with scape and pedicellus often more or less infuscate. Femora often more or less black, tibiae sometimes partly infuscate. Head and thorax sometimes both yellow-marked 5

5 Antenna (Fig. 455) with pedicellus 2·0–2·5 times as long as broad, at most slightly longer than first funicular segment; all funicular segments distinctly longer than broad. Anterior setae of scutellum slightly to much behind the middle. Body black with at most a hardly perceptible bronze tinge; head and thorax sometimes yellow-marked 6

— Antenna (Figs 458, 459 with pedicellus at most 1·7 times as long as broad, much longer than first funicular segment; funicular segments relatively short, the first varying from slightly transverse to 1·7 times as long as broad. Anterior setae of scutellum approximately in the middle. Body black with weak to distinct metallic tints 6a

6 Antenna (Fig. 455) with scape 2·5–3·0 times as long as broad, slightly shorter than eye, not reaching above the vertex, its ventral plaque shorter and placed wholly in the upper half; pedicellus plus flagellum about 1·2 times breadth of mesoscutum .... ***flavifrons*** (p. 296)

— Antenna with scape swollen, only about 1·7 times as long as broad, about 1·3 times as long as eye, reaching well above the vertex, its ventral plaque linear and extending over about middle third of scape; pedicellus plus flagellum about 1·4 times breadth of mesoscutum ***nubigenus*** (p. 298)

6a Length 1·1–1·4 mm. Antennal scape (Fig. 458) mainly to wholly black. Body not pale-marked ***arrabonicus*** (p. 265)

— Length 0·70–0·95 mm. Antennal scape (Fig. 459) testaceous to brown with the ventral plaque darker. Face, genae, and orbits usually more or less testaceous or yellowish ***meridionalis*** (p. 273)

7 Antennal scape (Figs 460, 464, 468, 482–541) with ventral plaque situated wholly or mainly in the upper half of the scape. Body most often without metallic tints except sometimes a weak bronze tinge on the gaster, though distinctly metallic in a few species 43

— Antennal scape with ventral plaque *either* extending most of the length of the scape; *or* placed about in the middle of the scape; *or* placed mainly or wholly in the lower half of the scape. Body normally more or less metallic, often strongly so, though a few species are non-metallic 8

8 Malar sulcus with a large subtriangular fovea below the eye 9

— Malar sulcus without a fovea, or with at most a very small fovea, below the eye 11

9 Marginal vein of forewing about 5 times length of stigmal vein, the latter being very short. Body metallic greenish. Mid lobe of mesoscutum without a median line .... ***foraminifer*** (p. 285)

— Marginal vein relatively shorter, the stigmal vein longer. Body black with hardly perceptible metallic tinge. Mid lobe of mesoscutum usually with some trace of a median line 10

10 Antenna (Fig. 461) with relatively longer funicular segments .... ***grandii*** (p. 218)

— Antenna (Fig. 462) with relatively shorter funicular segments .... ***dauci*** (p. 217)

11 Antenna (Fig. 463): scape longer than an eye, its ventral plaque extending nearly the whole length; a little inside the plaque there is a row of setae which extends to above the middle; inner aspect of pedicellus with some long setae, one of which is curved. Body metallic with mouth-edge more or less broadly, prosternum at least partly, yellowish; legs, except hind coxae and usually mid coxae, yellow .... ***orithyia*** (p. 280)

— Antenna: either the scape has a shorter ventral plaque or, if the plaque is nearly as long as in *orithyia*, then the scape is not longer than an eye and has no row of setae inside the ventral plaque; inner aspect of pedicellus with shorter setae. Prosternum almost always metallic or black, rarely yellow; mouth-edge not, or only narrowly, pale 12

12 Antennal scape (Fig. 464) as long as an eye, with 2–3 setae on its external surface just inside the ventral plaque, which extends over about the middle third of the scape; clava with a long, slightly curved terminal spine which lacks an apical seta. Thorax slightly flattened dorsoventrally. Body bright green to bluish; legs, including fore coxae, yellow .... ***gratus*** (p. 283)

— Antennal scape without setae on its external surface in this position, the only setae present being on its ventral edge near the bottom end of the plaque; clava with a straight terminal spine which has an apical seta 13

13 Propodeum (see Fig. 284) with spiracles very large. Antenna (Fig. 466) .... ***lysippe*** (p. 226)

— Propodeal spiracles relatively smaller 14

14 Breadth of mouth opening about 2·3 times the malar space. Antenna (Fig. 465) ***eurystoma*** (p. 226)
[The unknown male of *hians* might be expected to run here but have an even broader mouth opening.]

— Breadth of mouth opening at most about 1·5 times the malar space 15

15 Body almost entirely yellow; legs entirely yellow. (Turkey) .... ***flavus*** (p. 235)

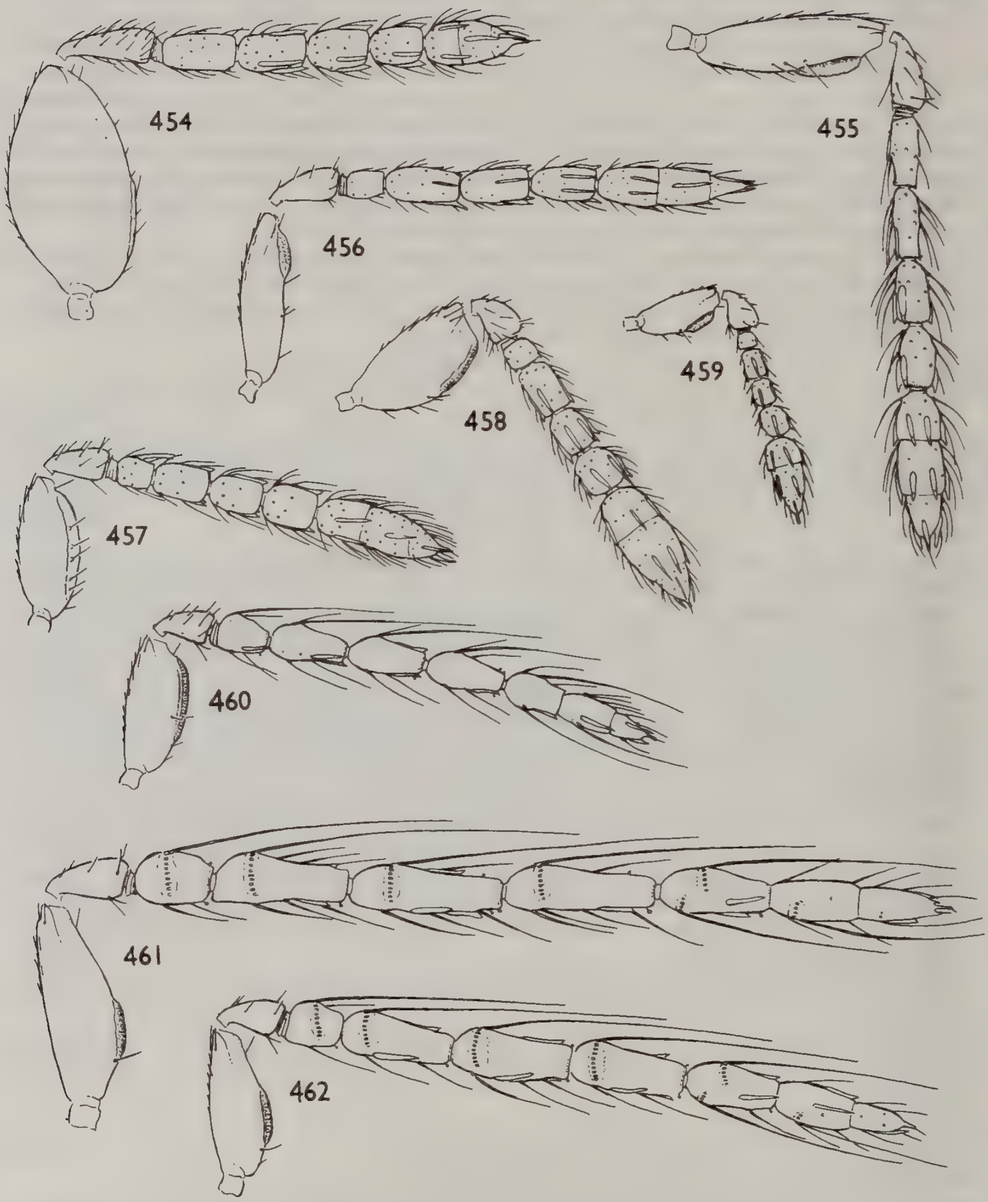
— Body without, or with more restricted, yellow markings 16

16 Antennal scape (Figs 467–472) with ventral plaque extending about equally into its upper and lower halves 17

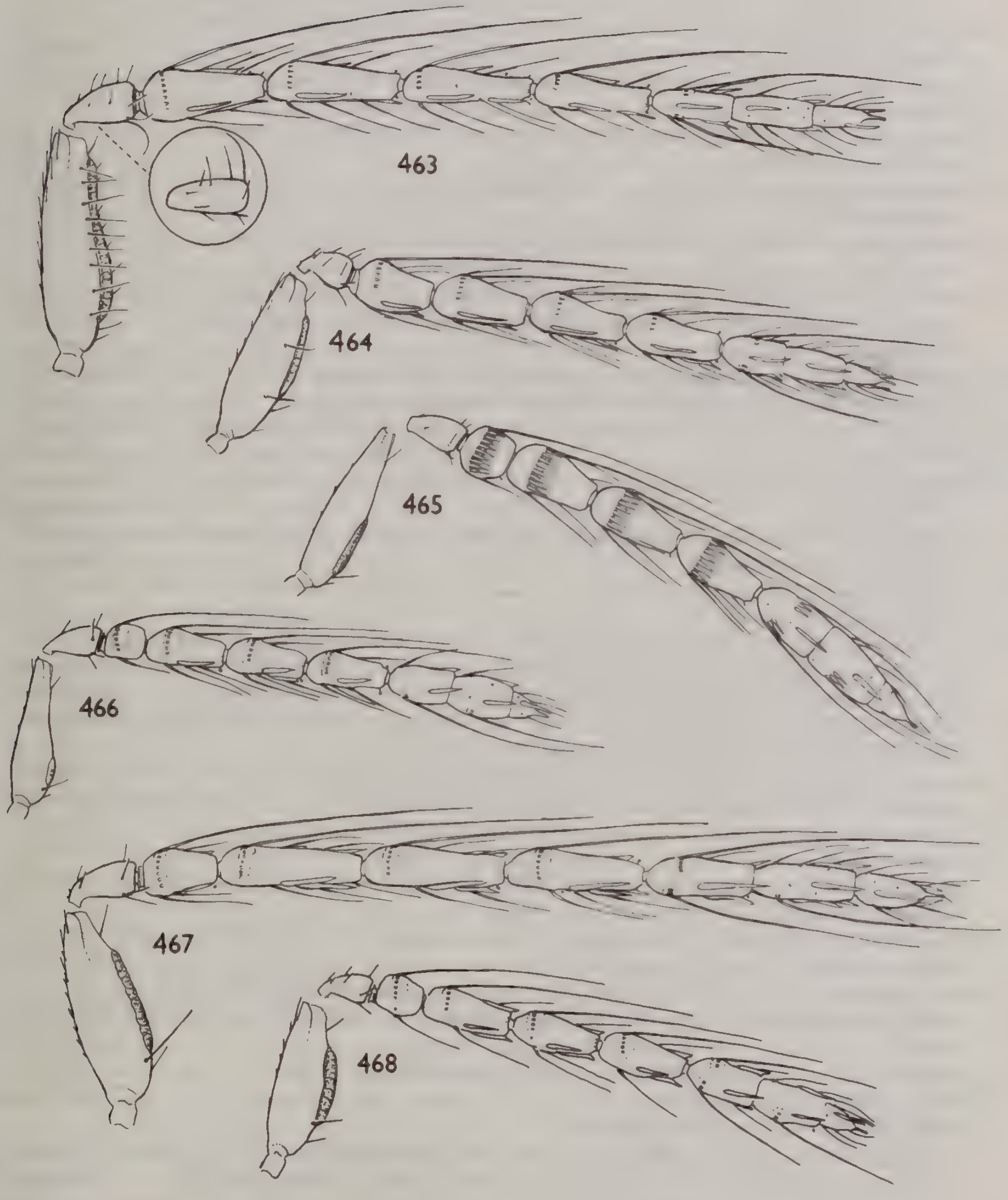
— Antennal scape (Figs 473–481) with ventral plaque situated mainly or wholly in its lower half. Digistus with 2 teeth 24

17 Digitus (Fig. 486) with 3 teeth. Antenna (Fig. 467) with combined length of pedicellus and flagellum 2·15–2·75 times breadth of mesoscutum; ventral plaque of scape about 0·7 length of scape, the latter with a very long seta at the bottom of the plaque. Propodeum with relatively more distinct reticulation .... ***zosimus*** (p. 232)

— Digitus with 2 teeth. Antenna with combined length of pedicellus and flagellum 1·8–2·3 times



Figs 454–462 Antennae, males. 454, *Aprostocetus* (*Aprostocetus*) *phillyreae* (Domenichini). 455, *A.* (*A.*) *flavifrons* (Walker). 456, *A.* (*A.*) *domenichinii* (Erdös). 457, *A.* (*A.*) *clavicornis* (Zetterstedt). 458, *A.* (*A.*) *arrabonicus* (Erdös). 459, *A.* (*A.*) *meridionalis* sp. n. 460, *A.* (*A.*) *foraminifer* sp. n. 461, *A.* (*A.*) *grandii* (Domenichini). 462, *A.* (*A.*) *dauci* sp. n.



Figs 463–468 Antennae, males. 463, *Aprostocetus* (*Aprostocetus*) *orithyia* (Walker); with dorsal view of right pedicellus (inset in circle). 464, *A.* (*A.*) *gratus* (Giraud). 465, *A.* (*A.*) *eurystoma* Graham. 466, *A.* (*A.*) *lysippe* (Walker). 467, *A.* (*A.*) *zosimus* (Walker). 468, *A.* (*A.*) *meroe* sp. n.

breadth of mesoscutum; ventral plaque of scape at most 0·65 length of scape, the latter with a shorter seta at the bottom end of the plaque. Propodeum with very weak reticulation 18

18 Antenna (Figs 468, 469) with ventral plaque of scape 0·50–0·65 length of scape. Stigmal vein forming an angle of about 45° with costal edge of wing 19

— Antenna (Figs 470–472) with ventral plaque of scape 0·28–0·45 length of scape, if more than 0·33 then stigmal vein sometimes forming an angle of about 50° with costal edge of wing 21

19 Antenna (Fig. 468) with combined length of pedicellus and flagellum 1·80–1·85 times breadth of mesoscutum. Hind tibiae broadly to mainly black .... ***meroe***(p. 242)

— Antenna (Fig. 469) with combined length of pedicellus and flagellum 2·0–2·3 times breadth of mesoscutum. Hind tibiae usually yellow, occasionally with weak postmedian fuscous ring 20

20 Antenna (Fig. 469) with flagellum fusco-testaceous to fuscous. Mid and hind tarsi dark with at most basitarsus pale .... ***leucone***(p. 239)

— Antenna with flagellum testaceous. Mid and hind testaceous with third segment brownish, fourth fuscous .... ***verutus***(p. 240)

21 Antenna (Fig. 470) with ventral plaque of scape 0·42–0·45 length of scape. Larger species, length up to 1·4 mm. Body black with olive metallic tint 22

— Antenna (Figs 471, 472) with ventral plaque of scape 0·28–0·33 length of scape. Smaller species, length 0·65–0·9 mm. Body fuscous to brownish testaceous, usually with very weak metallic tinge 23

22 Stigmal vein forming an angle of about 45° with costal edge of wing .... ***caudatus***(p. 236)

— Stigmal vein forming an angle of about 50° with costal edge of wing .... ***eupolis***(p. 255)

23 Antenna (Fig. 472) with ventral plaque of scape about 0·28 length of scape. Body length 0·65–0·80 mm .... ***ciliatus***(p. 238)

— Antenna (Fig. 471) with ventral plaque about 0·33 length of scape. Body length 0·7–0·9 mm ***terebrans***(p. 238)

24 Antenna (Fig. 469) with ventral plaque of scape extending somewhat into upper half, 0·53–0·56 length of scape .... ***leucone***(p. 239)

— Antenna with ventral plaque of scape not or hardly extending into the upper half, 0·20–0·42 length of scape 25

25 Antenna (Fig. 473) with first funicular segment 1·5–1·7 times as long as broad; scape 3·1–3·6 times as long as broad, reaching slightly above vertex, with ventral plaque 0·22–0·30 length of scape. Thorax about 1·2 times as long as broad .... ***amenon***(p. 249)

— Antenna with first funicular segment usually quadrate or nearly so, if distinctly longer than broad then thorax 1·4–1·7 times as long as broad 26

26 Antennal scape 2·45–2·80 times as long as broad, not or hardly reaching above vertex; ventral plaque 0·32–0·41 length of scape. Mid and hind tibiae nearly always broadly infuscate, sometimes mainly so 27

— Antennal scape normally 2·9–3·7 times as long as broad, if only 2·8 times then reaching distinctly above vertex; ventral plaque 0·20–0·38 length of scape. Tibiae most often yellow, sometimes mainly fuscous 31

27 Antennal scape 2·45 times as long as broad; ventral plaque 0·42 length of scape; first funicular segment nearly 1·5 times as long as broad .... ***nymphis***(p. 254)

— Antennal scape 2·58–2·80 times as long as broad; ventral plaque 0·32–0·41 length of scape 28

28 Length 1·37 mm. Antennal scape 2·58 times as long as broad; ventral plaque 0·36 length of scape .... ***oropus***(p. 255)

— Length 0·8–1·1 mm. Antennal scape 2·63–2·80 times as long as broad 29

29 Ventral plaque 0·32 length of scape .... ***eleuchia***(p. 252)

— Ventral plaque 0·35–0·41 length of scape 30

30 Head and thorax with weak olive-greenish or bluish green metallic tints. Mid and hind tibiae at least broadly pale at base and apex, sometimes only weakly infuscate medially ... ***minimus***(p. 247)

— Head and thorax with hardly perceptible bronze or bluish tinge. Mid and hind tibiae fuscous to black with at most bases and tips narrowly pale .... ***rhipheus***(p. 243)

31 Body extensively yellow-marked; legs, except coxae and tarsi partly, yellow. Antennal scape reaching distinctly above vertex, 3·0–3·4 times as long as broad; ventral plaque 0·29 length of scape .... ***vassolensis***(p. 231)

— Body not or hardly yellow-marked; femora nearly always at least slightly infuscate, sometimes broadly black; tibiae occasionally infuscate 32

32 Ventral plaque of antennal scape (Figs 476–477) 0·20–0·27 length of scape, the latter reaching distinctly above the vertex 33

— Ventral plaque of scape 0·29–0·41 length of scape, the latter sometimes not reaching the vertex 35

33 Antenna (Fig. 476) with combined length of pedicellus and flagellum about 1·7 times breadth of mesoscutum; clava about 4·5 times as long as broad; scape 3·4 times as long as broad. Parasite of ? *Cystiphora* sp. on *Chondrilla* sp. .... ***atticus***(p. 253)

— Antenna with combined length of pedicellus and flagellum 1·9–2·1 times breadth of mesoscutum; clava and scape sometimes otherwise 34

34 Antenna (Fig. 477) with clava about as long as funicular segments three and four together, 4·5–5·5 times as long as broad; scape 3·0–3·6 times as long as broad. Mid and/or hind tibia often with brown to fuscous postmedian ring. Parasite of Cecidomyiidae spp. on grass ***menius***(p. 234)

— Antenna with clava slightly longer than funicular segments three and four together, about 4·5 times as long as broad; scape about 3·35 times as long as broad. Mid and hind tibiae yellow. Parasite of *Rhabdophaga marginemtorquens* on *Salix* spp. .... ***torquentis***(p. 249)

35 Hind tibiae black with at most bases and tips pale; mid tibiae at least broadly infuscate medially, sometimes mainly fuscous. Antennal scape not reaching above the vertex. Head and thorax with very obscure bluish or olive metallic tints 36

— Mid and hind tibiae most often yellow but if broadly infuscate medially then antennal scape reaching distinctly above the vertex and head and thorax usually more distinctly metallic 38

36 Antenna (Fig. 475) with scape 2·7–2·9 times as long as broad; ventral plaque 0·35–0·41 length of scape. Marginal vein of forewing 2·70–3·65 times length of stigmal vein........ ***rhipheus***(p. 243)

— Antennal scape about 3 times as long as broad; ventral plaque 0·28–0·30 length of scape. (Perhaps the two following are forms of *rhipheus*.) 37

37 Marginal vein nearly 4 times length of stigmal vein........ ***euagoras***(p. 255)

— Marginal vein about 3 times length of stigmal vein .... ***lacaena***(p. 254)

38 Antenna (Fig. 478) with combined length of pedicellus and flagellum 2·05–2·20 times breadth of mesoscutum; scape (?2·85–) 3·30–3·50 times as long as broad, reaching distinctly above vertex; ventral plaque 0·32–0·35 length of scape. Host: *Rhabdophaga heterobia* on *Salix* spp. ***salictorum***(p. 246)

— Antenna with combined length of pedicellus and flagellum 1·6–2·0 times breadth of mesoscutum, but if 1·9 or more than scape at most 3 times as long as broad. Hosts otherwise 39

39 Antenna (Fig. 479) with scape 3·2–3·7 times as long as broad; combined length of pedicellus and flagellum 1·6–1·7 times breadth of mesoscutum; ventral plaque of scape 0·32–0·35 length of scape. Hosts on *Artemisia* spp. .... ***cecidomyiarum***(p. 251)

— Antennal scape 2·8–3·1 times as long as broad; combined length of pedicellus and flagellum 1·6–2·0 times breadth of mesoscutum. Hosts (except of *artemisiae*) not on *Artemisia* spp. 40

40 Antenna (Fig. 481) with ventral plaque of scape 0·34–0·38 length of scape, the latter reaching somewhat above the vertex. Host: *Rhopalomyia ptarmicae* on *Achillea ptarmica* ***anodaphus***(p. 244)

— Antennal scape with ventral plaque 0·28–0·30 length of scape. Hosts on other plants 41

41 Antenna with combined length of pedicellus and flagellum about twice breadth of mesoscutum; scape hardly reaching above the vertex. Host: *Dasineura trifolii* on *Trifolium* spp. ***rhacius***(p. 245)

— Antenna with combined length of pedicellus and flagellum 1·6–1·8 times breadth of mesoscutum; scape reaching slightly above the vertex 42

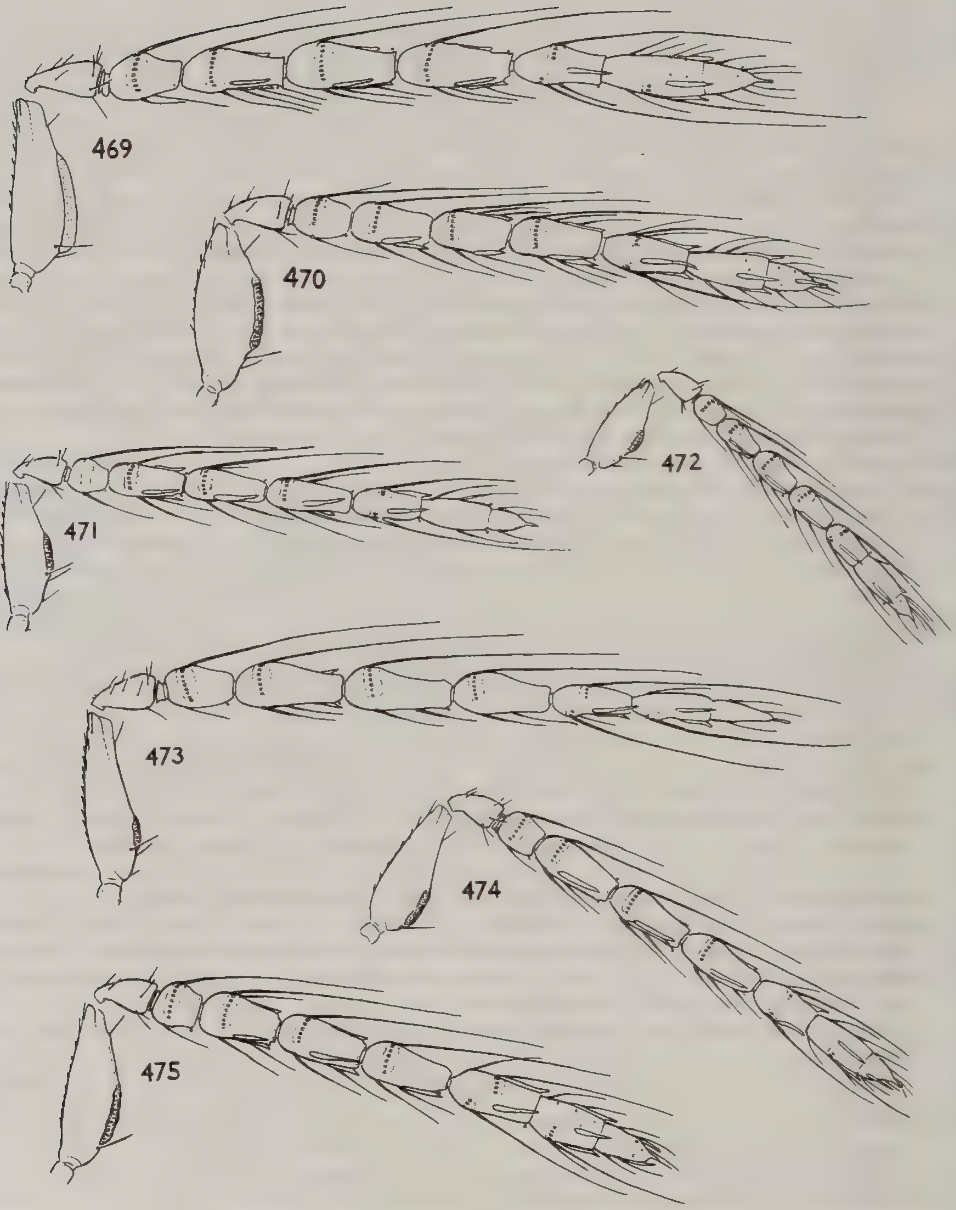
42 Antenna (Fig. 480) with scape 2·9–3·0 times as long as broad; clava 4–5 times as long as broad; ventral plaque about 0·3 length of scape. Tibiae yellow; dorsellum partly to mainly pale; wing-venation yellow. Host: *Rhopalomyia artemisiae* on *Artemisia* spp. .... ***artemisiae***(p. 252)

— Antenna with scape 3·23 times as long as broad; clava 5·5 times as long as broad. Hind tibiae infuscate medially; dorsellum black; wing-venation brownish .... ***A. (A.)*** sp.

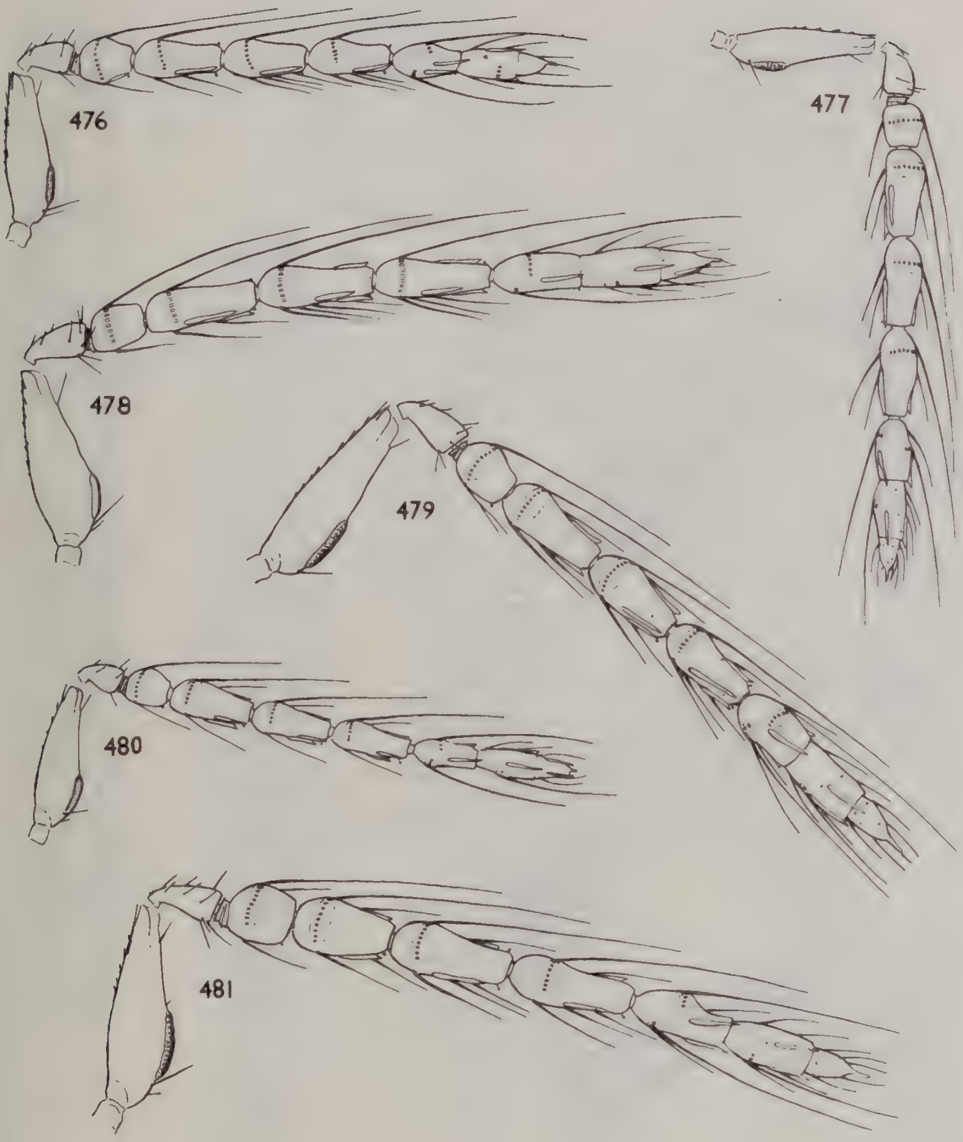
43 Malar sulcus expanded, just below the eye, to form a large subtriangular fovea which extends from 0·25 to 0·45 the length of the gena 44

— Malar sulcus without such a fovea, or with at most a very small and inconspicuous fovea in a few species 48

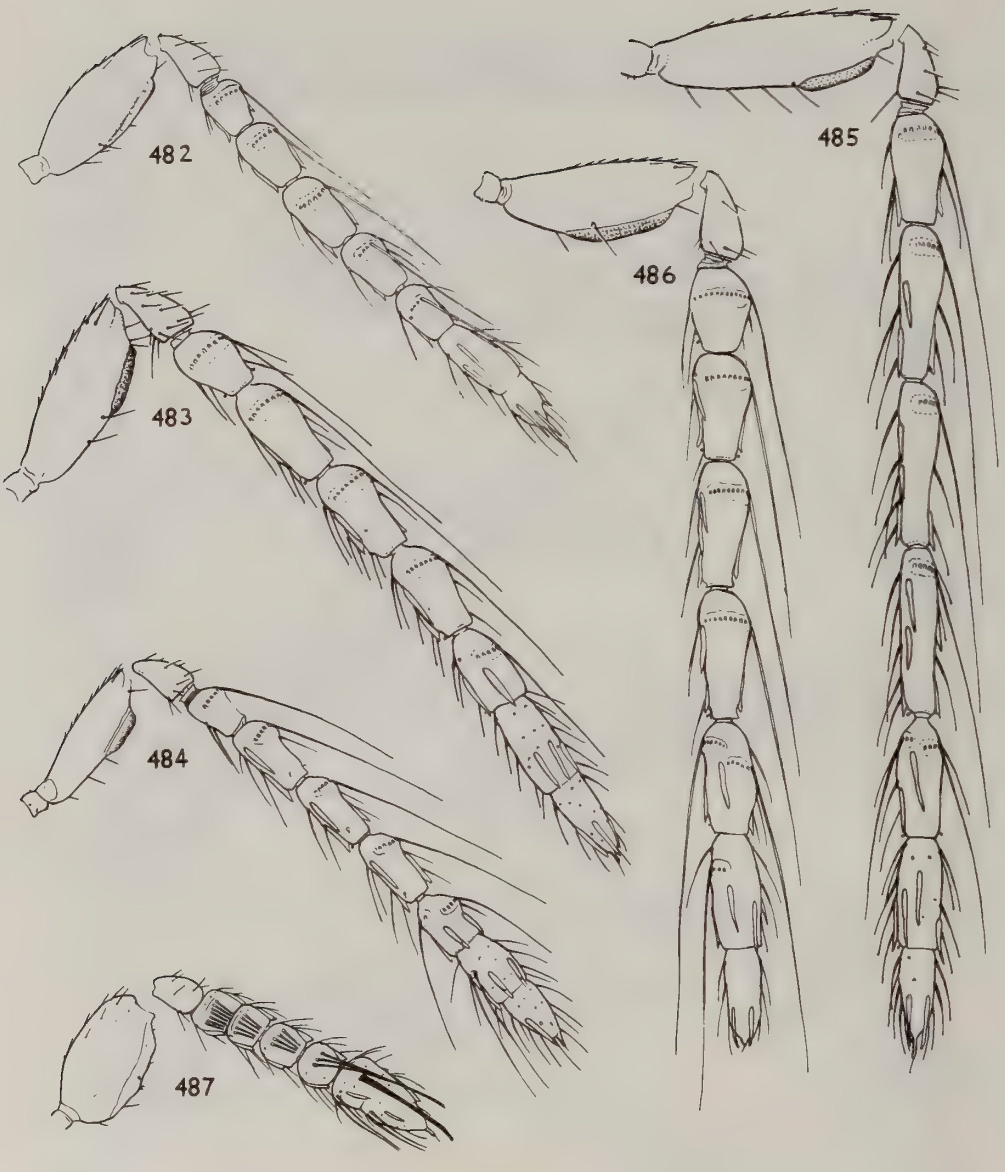
44 Head and thorax at least moderately extensively, sometimes mainly, yellow or tan; gaster often broadly so proximally. Legs long and slender; hind coxae in profile more than twice as long as broad. Antennal scape (Fig. 485) longer than an eye, reaching well above vertex, its ventral plaque less than half the length of the scape; combined length of pedicellus and flagellum about slightly more than twice breadth of mesoscutum; first funicular segment slightly longer than pedicellus, 1·6–2·0 times as long as broad; funicular segments two to four 3–4 times as long as broad. Propodeal callus with 2 setae .... ***luteus***(p. 364)



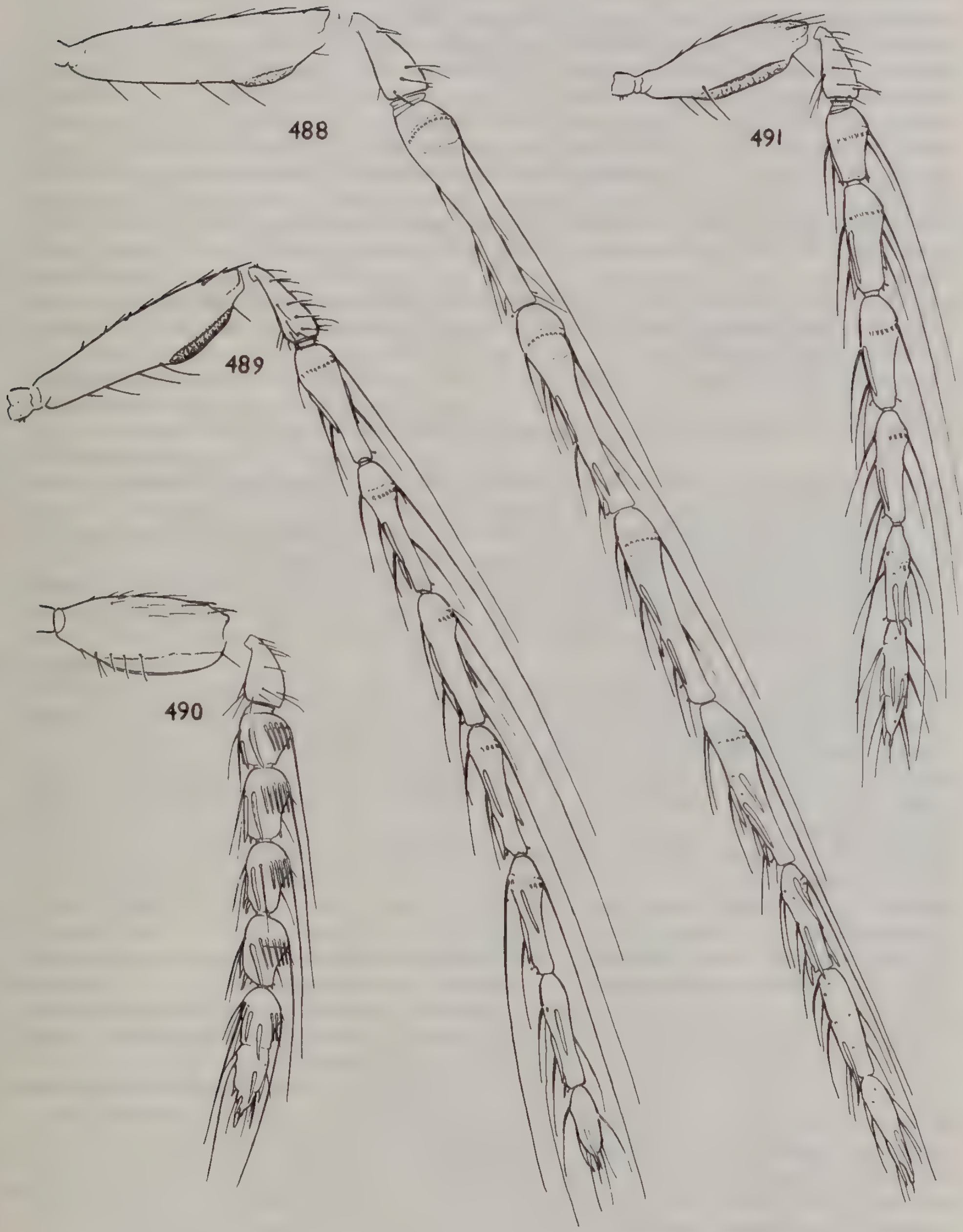
Figs 469–475 Antennae, males. 469, *Aprostocetus* (*Aprostocetus*) *leucone* (Walker). 470, *A.* (*A.*) *caudatus* Westwood. 471, *A.* (*A.*) *terebrans* Erdös. 472, *A.* (*A.*) *ciliatus* (Nees). 473, *A.* (*A.*) *amenon* (Walker). 474, *A.* (*A.*) *minimus* (Ratzeburg). 475, *A.* (*A.*) *rhipheus* (Walker).



Figs 476–481 Antennae, males. 476, *Aprostocetus* (*Aprostocetus*) *atticus* sp. n. 477, *A.* (*A.*) *menius* (Walker). 478, *A.* (*A.*) *salictorum* sp. n. 479, *A.* (*A.*) *cecidomyiarum* (Bouché). 480, *A.* (*A.*) *artemisiae* (Erdös). 481, *A.* (*A.*) *anodaphus* (Walker).



Figs 482–487 Antennae, males. 482, *Aprostocetus* (*Aprostocetus*) *xanthopus* (Nees). 483, *A.* (*A.*) *eurytomae* (Nees). 484, *A.* (*A.*) *aurantiacus* (Ratzeburg). 485, *A.* (*A.*) *luteus* (Ratzeburg). 486, *A.* (*A.*) *strobilanae* (Ratzeburg). 487, *A.* (*A.*) *calamarius* Graham.



Figs 488–491 Antennae, males. 488, *Aprostocetus* (*Aprostocetus*) *longiscapus* Thomson, lectotype. 489, *A.* (*A.*) *apama* (Walker). 490, *A.* (*A.*) *fulvipes* (Förster). 491, *A.* (*A.*) *planiusculus* (Thomson).

— Head, thorax and gaster either entirely black, or at most the mouth-edge, upper angle of mesopleuron, dorsellum and base of gaster more or less yellow. Legs relatively shorter and less slender; hind coxae less elongate. Antennal scape shorter than or at most as long as an eye, not reaching above the vertex, its ventral plaque often relatively longer; combined length of pedicellus and flagellum at most hardly twice breadth of mesoscutum; funicular segments sometimes relatively shorter. Propodeal callus sometimes with more than 2 setae... 45

45 Antenna (Fig. 482) with combined length of pedicellus and flagellum about 1·5 times breadth of mesoscutum. Spur of mid tibia as long as the basitarsus. Legs, except coxae more or less, and tips of the tarsi, yellow; tegulae yellow .... ***xanthopus*** (p. 287)

— Antenna with combined length of pedicellus and flagellum 1·7–1·9 times breadth of mesoscutum. Spur of mid tibia slightly shorter than the basitarsus. Femora usually at least slightly darkened proximally, often mainly black; tibiae sometimes infuscate; tegulae usually brown or black 46

46 Mid lobe of mesoscutum shiny, with excessively fine and delicately engraved reticulation. Head hardly broader than the mesoscutum. Tibiae usually more or less infuscate; femora mainly black .... ***strobilanae*** (p. 299)

— Mid lobe of mesoscutum less shiny, with more distinct and less fine reticulation. Head at least about 1·2 times breadth of mesoscutum. Tibiae nearly always testaceous to yellow; fore and mid femora often entirely pale 47

47 Antenna (Fig. 483) with ventral plaque of scape on average longer, (0·40–) 0·45–0·60 length of scape .... ***eurytomae*** (p. 214)

— Antenna (Fig. 484) with ventral plaque of scape shorter, 0·30–0·35 length of scape ***aurantiacus*** (p. 215)

48 Thorax strongly flattened dorsoventrally, so that surfaces of mesoscutum, scutellum, dorsellum and propodeum all lie nearly in the horizontal plane 49

— Thorax distinctly to strongly arched dorsally, the dorsellum and propodeum sloping distinctly with respect to the tangential plane of the mesoscutum and scutellum 52

49 Antenna (Fig. 487) with scape swollen and less than twice as long as broad, its ventral plaque extending well below the middle; funicle short with subquadrate segments; combined length of pedicellus and flagellum hardly greater than breadth of mesoscutum; clava about 2·5 times as long as broad .... ***calamarius*** (p. 357)

— Antenna with scape at least slightly more than twice as long as broad; funicular segments two to four at least slightly longer than broad; combined length of pedicellus and flagellum distinctly greater than breadth of mesoscutum; clava at least 3 times as long as broad 50

50 Antenna (Fig. 490) with scape only slightly more than twice as long as broad; first funicular segment subquadrate, segments two to four somewhat longer than broad; clava about 3·5 times as long as broad .... ***fulvipes*** (p. 358)

— Antenna with scape 3·0–3·7 times as long as broad; first funicular segment 2–4 times as long as broad, segments two to four very elongate; clava 8–10 times as long as broad 51

51 Antenna (Fig. 491) with scape about 3 times as long as broad. its ventral plaque longer; funicular segments relatively shorter; clava about 8 times as long as broad .... ***planiusculus*** (p. 360)

— Antenna (Fig. 489) with scape 3·5–3·7 times as long as broad, its ventral plaque shorter; funicular segments relatively longer; clava about 10 times as long as broad .... ***apama*** (p. 359)

52 Very small squat species, length about 0·6 mm; forewing hardly twice as long as broad, with tip of marginal vein situated at about 0·45 length of wing; submarginal vein with only 2 dorsal setae; thorax very shiny, with obsolescent sculpture, slightly metallic
possible male of ***suevius*** in subgen. ***CHRYSOTETRASTICHUS*** (p. 119)

— Not having the above combination of characters. Species nearly always relatively larger, forewing usually longer and with tip of marginal vein situated farther distad; submarginal vein nearly always with 3 or more dorsal setae. Thorax sometimes less shiny, or non-metallic 53

53 Antenna (Fig. 488) with combined length of pedicellus and flagellum about 2·5 times breadth of mesoscutum; flagellum extremely long and slender; first funicular segment as long as the second, all the funicular segments nearly 5 times as long as broad; clava slightly shorter than segments 3 plus 4 of the funicle, its first segment with only one (dorsal) partial whorl of long dark setae; scape longer than an eye and reaching well above the vertex. Forewing: speculum absent; marginal vein fully 5 times length of stigmal vein. POL = OOL. Body weakly metallic with lower face and genae, prosternum and prepectus more or less, and legs except base of hind coxae, yellowish. Propodeal callus with 7–9 setae .... ***longiscapus*** (p. 281)

— Antenna with flagellum never so elongate; either the first funicular segment is shorter than the second or, if as long as the second then the other funicular segments are relatively shorter than in *longiscapus*; clava usually at least as long as segments 3 plus 4 of the funicle, its first segment nearly always with 2 (dorsal and ventral) partial whorls of long dark setae. The other characters rarely all present simultaneously 54

54 Genitalia (Figs 580, 583, 584): digitus with 2 teeth, the second tooth sometimes very small. Mesoscutum not very shiny, its reticulation usually at least very slightly raised. Gaster: longest seta of each cercus only slightly longer than the next longest 55

— Genitalia: digitus with a single spine. Mesoscutum often more shiny, its reticulation often superficial or engraved. Most often one seta of each cercus is very distinctly longer than the next longest 56

55 Propodeal callus with 3–4 setae. Mid lobe of mesoscutum without a median line. Marginal vein of forewing approximately as long as the costal cell. Head and thorax with yellow markings which are often extensive. Setae of dorsum of thorax black. Antenna (Fig. 492) with scape 2·9–3·1 times as long as broad, its ventral plaque (0·21–) 0·28–0·34 length of scape **westwoodii** (p. 219)

— Propodeal callus normally with 2 setae, very rarely 3. Median line of mesoscutum present, usually very distinct. Marginal vein slightly to very distinctly longer than the costal cell. Head and thorax with or without yellow markings. Setae of thorax either blackish, or partly pale. Antenna (Fig. 493) with scape 2·35–3·00 times as long as broad, its ventral plaque 0·3–0·5 length of scape .... **epicharmus** (p. 222), **agrus** (p. 223)

56 Gaster: setae of each cercus subequal in length, or the longest seta at most slightly longer than the next longest, usually weakly curved or straight. Mesoscutum tending to be relatively dull, with sharper sculpture. Body nearly always at least weakly metallic 57

— Gaster: one seta of each cercus 1·5–2·0 times as long as the next longest, often more or less sinuate or kinked in the middle. Mesoscutum very often shiny with excessively fine and delicate sculpture. Body often non-metallic 65

57 Antenna (Fig. 494) with short funicular segments, the fourth at most very slightly longer than broad, the second at most twice as long as broad; clava at most 2·5 times as long as broad. Mid lobe of mesoscutum with adnotaular setae suberect. Body without pale markings **aristaeus** (p. 262)

— Antenna with fourth funicular segment at least 1·7 times as long as broad, the second sometimes more than twice as long as broad; clava at least 3·5 times as long as broad. The other characters usually different 8

58 Antenna (Fig. 495) with whorled setae of funicular segments extremely long, for example those of the first segment reach level with the tip of the fourth segment; first funicular segment nearly twice as long as broad .... **occidentalis** (p. 266)

— Antenna with whorled setae of funicular segments not so extremely long, those of the first segment not reaching level of tip of third segment; first funicular segment quadrate to slightly longer than broad 59

59 Antenna (Fig. 496) with clava about 6 times as long as broad; pedicellus 2·2–2·5 times as long as broad .... **bucculentus** (p. 270)

— Antenna with clava at most hardly 5 times as long as broad; pedicellus relatively shorter 60

60 Propodeal callus with 2 setae. Malar sulcus straight. Body with only upper angle of mesopleuron, and sometimes mouth-edge, pale .... **pausiris** (p. 263)

— Propodeal callus normally with 3–6 (rarely 2) setae. Malar sulcus slightly curved. Body sometimes extensively yellow-marked 61

61 Forewing with venation thick, stigma large (much as in Fig. 227). Body black with scarcely perceptible bluish metallic tinge. Legs with femora and tibiae mainly black ...... ? **laticeps** (p. 259)

— Forewing with venation less thick, stigma smaller. Body with distinct metallic tints, often more or less yellow-marked. Legs usually more extensively yellow 62

62 Propodeal callus with 2 setae. Whorled setae of funicular segments two to four hardly reaching beyond the tip of the segments following that which bears them; whorled setae of first claval segment hardly reaching level with tip of clava. Head, thorax and gaster extensively yellow-marked .... **levadiensis** (p. 267)

— Propodeal callus usually with 3 setae, rarely 2. Whorled setae of funicular segments two to four reaching somewhat beyond the tip of the segment following that which bears them; whorled setae of first claval segment reaching slightly beyond tip of clava. Body sometimes less extensively yellow-marked 63

63 Antenna (Fig. 498) with ventral plaque of scape 0·43–0·50 length of scape. Prepectus black.

Body dark with at most face and orbits, upper angle of mesopleuron, dorsellum, and sometimes spots on pronotum, front angles of mid lobe of mesoscutum, and hind margin of scutellum, yellow.
Spur of mid tibia 0·87–0·94 length of basitarsus .... ***serratularum***(p. 274)

— Antenna with ventral plaque of scape 0·29–0·45 length of scape, but if more than 0·36 then prepectus wholly yellow or at least with hind margin broadly yellow. Body sometimes more extensively yellow-marked than in above 64

64 Antenna (Fig. 499) with scape 2·50–2·75 times as long as broad. Spur of mid tibia 0·85–0·90 length of basitarsus. Head not or hardly broader than mesoscutum. Body more extensively yellow-marked: genae behind malar sulcus wholly or mainly yellow; prepectus usually wholly yellow, occasionally black with only the hind margin broadly yellow; head, pronotum, mesoscutum and scutellum usually yellow-marked, gaster occasionally with a yellowish subbasal spot .... ***venustus***(p. 277)

— Antenna (Fig. 500) with scape 2·85–3·17 times as long as broad. Spur of mid tibia 0·72–0·83 length of basitarsus. Head 1·10–1·15 times as broad as mesoscutum. Body less extensively yellow; genae behind malar sulcus wholly or mainly black; prepectus black; at most the face, orbits, upper angle of mesopleuron, marks on pronotum, mesoscutum and dorsellum, yellow .... ***rumicis***(p. 276)

65 Mesoscutum dull, with strong and slightly raised reticulation, composed of areoles which are (at least in the front half of the sclerite) short, at most twice as long as broad; propodeum with relatively strong and slightly raised reticulation. Body black without metallic tint. Antenna (Fig. 501) .... ***asperulus***(p. 212)

— Mesoscutum in most species shiny with its reticulation engraved or superficial, if very slightly raised then the propodeum is shiny and weakly sculptured (as in the majority of species that follow). Body sometimes with metallic tints 66

66 Malar sulcus with a very small fovea below the eye; hind coxae not very shiny, with slightly raised reticulation; propodeum longer than dorsellum, with thin but sharp median carina; antenna (Fig. 502) with whorled setae of funicular segments only moderately long, those of the first segment reaching somewhat beyond the tip of the second segment .... ***boreus***(p. 288)

— Malar sulcus without a fovea. Hind coxae shiny, their reticulation (except in *diplosidis*) engraved or superficial, often relatively weak. Antenna with whorled setae of flagellum nearly always relatively longer 67

67 Propodeal callus with 5–10 setae. Submedian lines of scutellum hardly nearer to sublateral lines than to each other, enclosing a space about 3 times as long as broad. Mesoscutum rather dull, with a silky lustre, excessively finely reticulate with elongate areoles, without a median line. POL about equal to OOL. Antenna (Fig. 503) with only moderately long whorled setae, those of first funicular segment reaching somewhat beyond tip of second segment
pachyneuros(p. 291)

— Propodeal callus usually with 2 setae, rarely 3 or 4. Submedian lines of scutellum nearly always at least slightly nearer to sublateral lines than to each other, their enclosed space nearly always less than 3 times as long as broad. Mesoscutum often more shiny, or with a median line. POL usually at least slightly greater than OOL. Antenna with whorled setae of flagellum in most species relatively longer 68

68 Submedian lines of scutellum not or hardly nearer to sublateral lines than to each other, enclosing a space 2·5–3·0 times as long as broad. Mid lobe of mesoscutum without a median line. Antenna (Fig. 504) with whorled setae of flagellum moderately long, those of the first segment reaching only slightly beyond the tip of the second segment. Squat species, with body black, having a weak bluish tinge in places. Spur of mid tibia as long as basitarsus. Genitalia (Fig. 504) about 2·5 times as long as broad .... ***neglectus***(p. 292)

— Submedian lines of scutellum usually distinctly nearer to sublateral lines than to each other and enclosing a space which is usually less elongate than in *neglectus*; if not then whorled setae of flagellum longer, body slender, spur of mid tibia only about 0·66 length of basitarsus. Genitalia more elongate 69

69 Submedian lines of scutellum equidistant from sublateral lines and from each other, enclosing a space 2·7–3·0 times as long as broad. Slender species with thorax 1·6–1·7 times as long as broad. Antenna (Fig. 510) with scape longer than an eye and reaching distinctly above the vertex; combined length of pedicellus and flagellum 2·20–2·35 times breadth of mesoscutum. Mesoscutum without a median line. Head 1·10–1·20 times as broad as mesoscutum. POL about equal to OOL. Spur of mid tibia about 0·66 length of basitarsus .... ***elongatus***(p. 363)

— Submedian lines of scutellum nearly always at least slightly nearer to sublateral lines than to each other and enclosing a less elongate space; if not, then the other characters do not all agree with the above 70

70 Antenna (Fig. 509) inserted about level with middle of eyes in specimens with undistorted head; scape very slender, reaching well above vertex, its front edge with numerous setae and its external surface with 3–9 setae; clava very elongate, its first and second segments at least twice as long as broad and with a slight constriction between them, the third segment longer than broad; whorled setae of funicular segments extremely long, those of first segment reaching about level with tip of fourth segment. Hindwing sharply pointed or acute ***ligus***(p. 335)

— Antenna inserted distinctly below level of middle of eyes; scape usually less slender, often not reaching above the vertex, its front edge normally with fewer setae and its external surface usually with none (in *emesa* and *catius* the scape is rather slender and its external surface has scattered setae; but these species have the clava short, its first and second segments hardly, third segment not, longer than broad); whorled setae of flagellum rarely so long. Hindwing often obtuse 71

71 Antenna (Fig. 505): scape rather slender, slightly longer than the clava, its external surface with 3–4 setae on the disc remote from the ventral edge; clava short, its first and second segments hardly longer than broad and without a constriction between them, third segment not longer than broad; first funicular segment nearly or about twice as long as broad. Body black, non-metallic .... ***emesa*** (p. 341), ***catius*** (p. 343)

— Antenna with scape either lacking setae on the disc of its external surface, or having at most one seta, in which case the scape is broader than in the above and at least the second segment of the clava is more elongate; first funicular segment often relatively shorter. Body black or yellow-marked, metallic or non-metallic 72

72 Antenna with first funicular segment (when undistorted) 1·8–2·5 times as long as broad, as long as or slightly longer than the pedicellus; flagellum very slender and long, combined length of pedicellus and flagellum at least twice breadth of mesoscutum; scape (except in *phineus*) reaching at least very slightly above the vertex 73

— Antenna with first funicular segment varying from quadrate to 1·6 times as long as broad, not longer than the pedicellus but sometimes slightly shorter; flagellum sometimes relatively shorter and/or thicker than in the above; scape usually not reaching above the vertex 77

73 Antenna (Fig. 508) with scape distinctly shorter than an eye, at most 3 times as long as broad, hardly reaching above vertex. Anterior setae of scutellum in the middle of the sclerite, usually a little shorter than the posterior setae. Thorax rather weakly arched, scutellum in profile weakly convex .... ***phineus***(p. 354)

— Antennal scape nearly or quite as long as an eye, except in *grylli* in which it is more slender and reaches distinctly above the vertex. Setae of scutellum equal in length, the posterior pair sometimes behind the middle. Thorax weakly to (most often) moderately arched 74

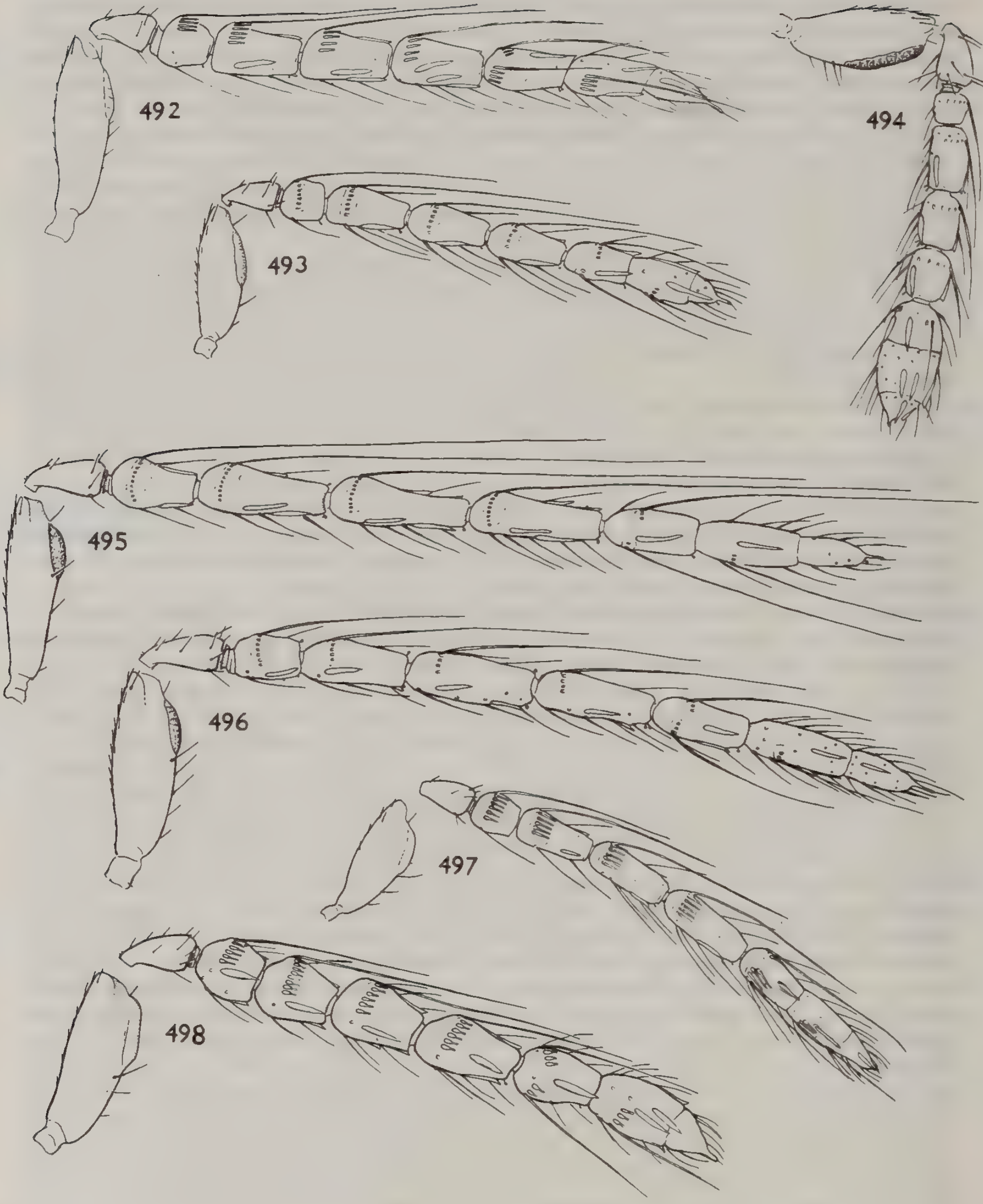
74 Mid lobe of mesoscutum without a median line. Thorax in profile (see Fig. 379) rather weakly arched, scutellum weakly convex, dorsellum and propodeum sloping at a lesser angle. Antenna (Fig. 507) with whorled setae of first funicular segment reaching only a little beyond the tip of the second segment. Body black. Femora usually more or less infuscate ***humilis***(p. 327)

— Mid lobe of mesoscutum with at least some trace of a median line. Thorax in profile moderately strongly arched, scutellum moderately convex. Antenna with whorled setae of funicle usually longer. Body sometimes yellow-marked. At most the hind femora more or less infuscate 75

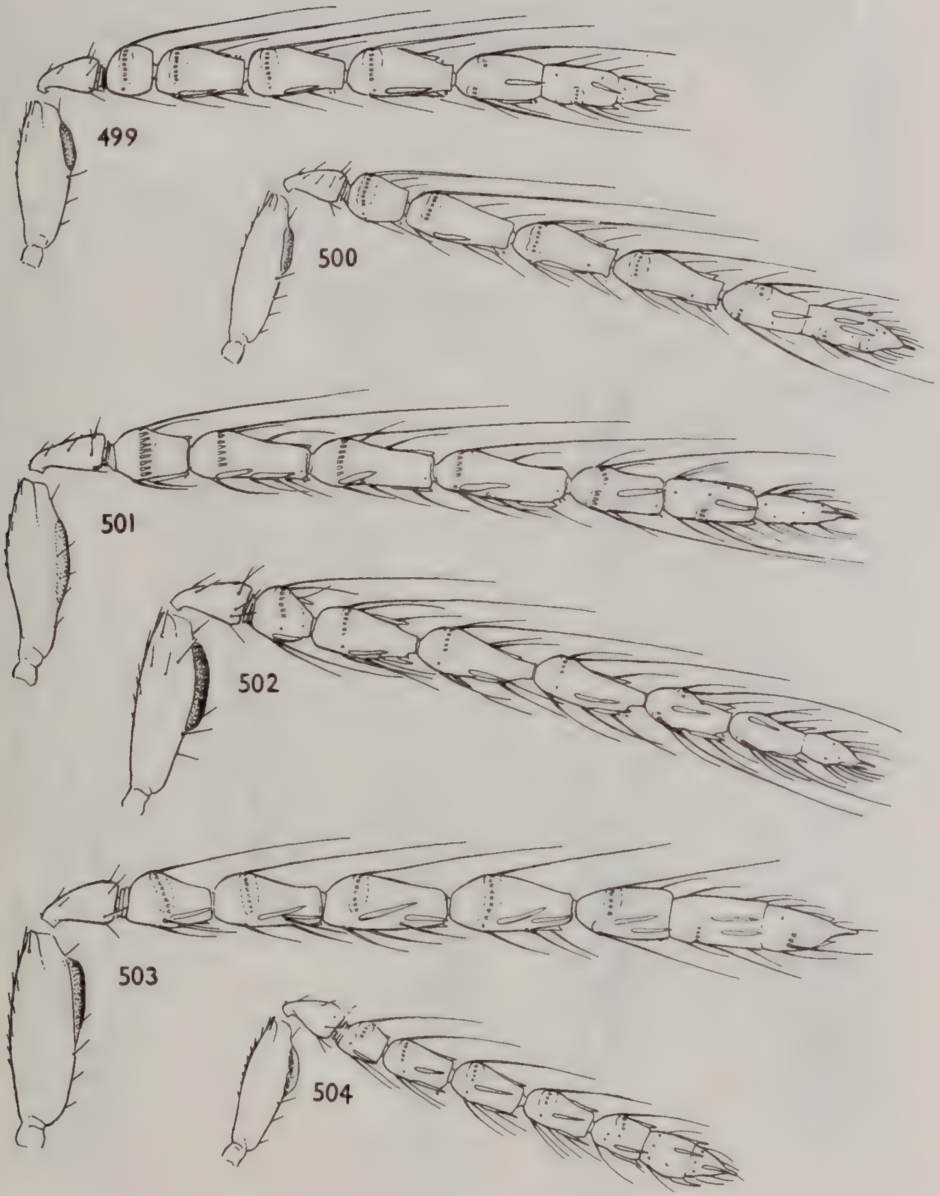
75 Hindwing acute; marginal vein at most 3 times length of stigmal vein. Antenna (Fig. 506) with scape somewhat shorter than an eye. OOL in dried specimens less than the diameter of an ocellus and POL at least 3 times OOL. Body black, with very weak metallic tinge in places; not yellow-marked, or at most mouth-edge and upper angle of mesopleuron pale; gaster black. Genitalia (Fig. 615) very elongate, 7·5–8·0 times as long as broad. Species associated with grasses .... ***grylli***(p. 289)

— Hindwing less strongly pointed, or subobtuse; marginal vein 3·0–3·7 times length of stigmal. Antennal scape as long as or slightly longer than an eye. OOL 1·2–1·4 times the diameter of an ocellus; POL 1·5–2·0 times OOL. Body non-metallic, head and thorax at least slightly yellow-marked; gaster often with testaceous subbasal spot. Genitalia 3·5–5·0 times as long as broad. Species associated with *Salix* spp. 76

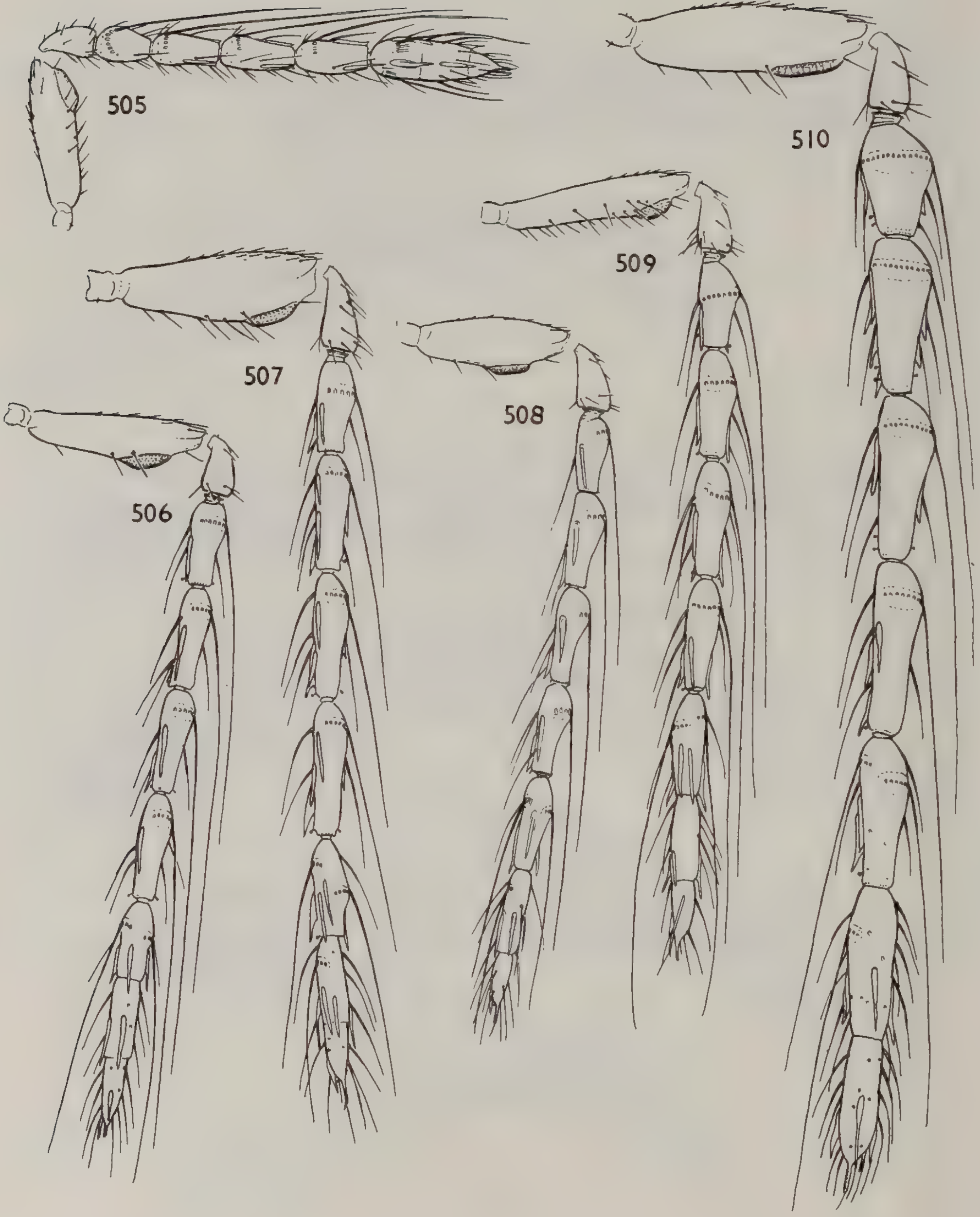
76 Antenna (Fig. 512) with scape slightly longer than an eye, reaching very distinctly above vertex in specimens with undistorted head. Legs, except hind coxae and sometimes mid coxae,



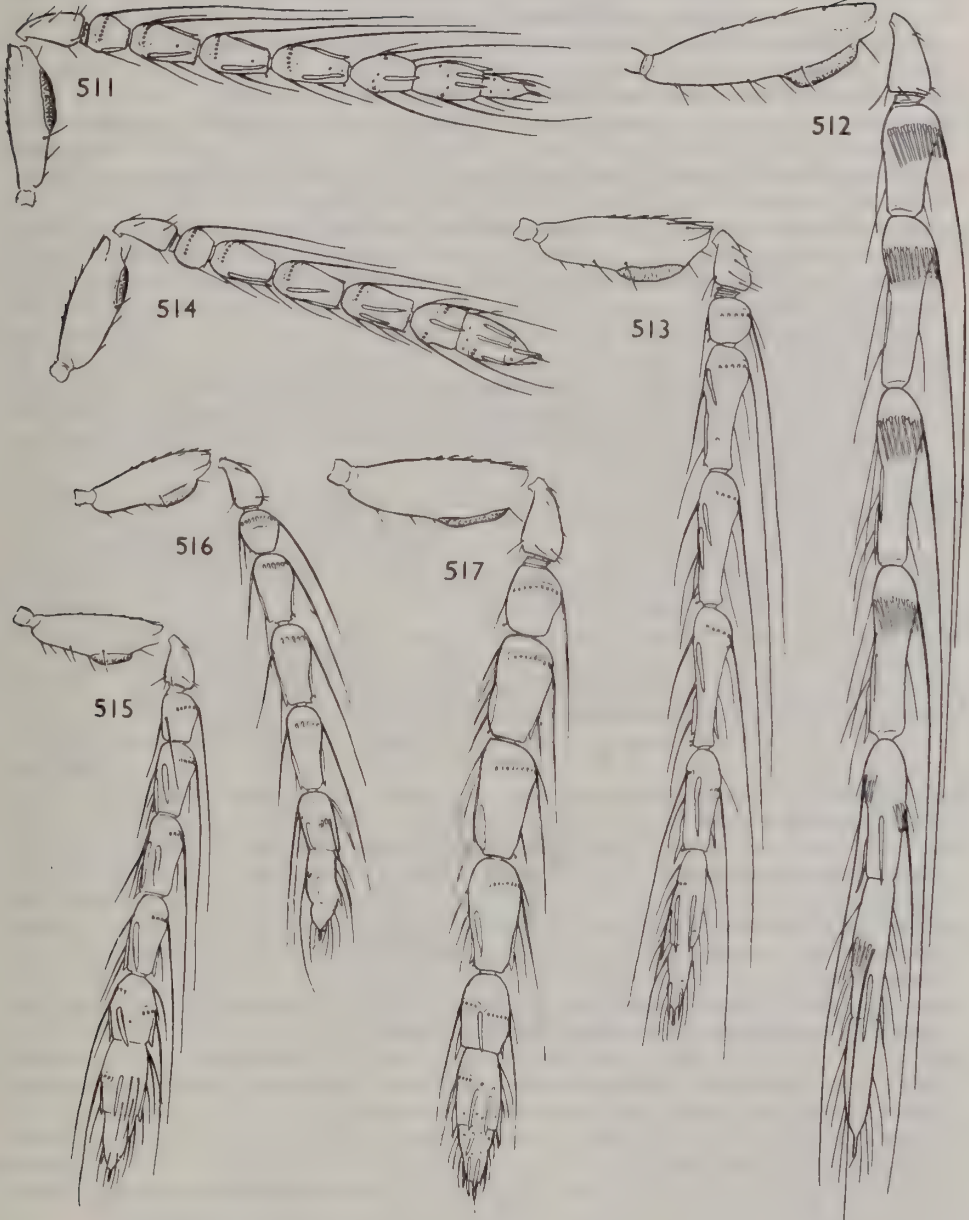
Figs 492–498 Antennae, males. 492, *Aprostocetus* (*Aprostocetus*) *westwoodii* (Fonscolombe). 493, *A.* (*A.*) *epicharmus* (Walker). 494, *A.* (*A.*) *aristaeus* (Walker). 495, *A.* (*A.*) *occidentalis* sp. n. 496, *A.* (*A.*) *bucculentus* (Kostjukov). 497, *A.* (*A.*) *pausiris* (Walker). 498, *A.* (*A.*) *serratularum* sp. n.



Figs 499–504 Antennae, males. 499, *Aprostocetus* (*Aprostocetus*) *venustus* (Gahan). 500, *A.* (*A.*) *rumicis* sp. n. 501, *A.* (*A.*) *asperulus* (Graham). 502, *A.* (*A.*) *boreus* (Delucchi). 503, *A.* (*A.*) *pachyneuros* (Ratzeburg). 504, *A.* (*A.*) *neglectus* (Domenichini).



Figs 505–510 Antennae, males. 505, *Aprostocetus* (*Aprostocetus*) *emesa* (Walker), drawn from a gynandromorphic specimen. 506, *A.* (*A.*) *grylli* (Erdös). 507, *A.* (*A.*) *humilis* Graham. 508, *A.* (*A.*) *phineus* (Walker). 509, *A.* (*A.*) *ligus* (Walker). 510, *A.* (*A.*) *elongatus* (Förster).



Figs 511–517 Antennae, males. 511, *Aprostocetus* (*Aprostocetus*) *diplosidis* Crawford. 512, *A.* (*A.*) *citrinus* (Förster). 513, *A.* (*A.*) *phragmiticola* sp. n. 514, *A.* (*A.*) *toddaliae* (Risbec). 515, *A.* (*A.*) *brachycerus* (Thomson). 516, *A.* (*A.*) *artemisicola* sp. n. 517, *A.* (*A.*) *forsteri* (Walker).

yellow. Thorax often extensively yellow dorsally, though sometimes mainly black. Hind legs, especially femora and tibiae, slender (hind tibia about 10 times as long as thick) ***citrinus***(p. 312)

— Antenna with scape as long as or very slightly longer than an eye, reaching only very slightly above the vertex. Hind and mid coxae, sometimes also fore coxae, more or less blackish; hind tibiae at least slightly, usually broadly, infuscate. Thorax mainly black. Hind legs, especially femora and tibiae, rather less slender (hind tibia about 9 times as long as broad) .... ***obliquus***(p. 314)

77 Externo-dorsal surface of hind coxae with some slightly raised reticulation. Body black, non-metallic. Antenna (Fig. 511). (Species introduced into Europe from New World) .... ***diplosidis***(p. 213)

— Hind coxae with weak, superficial to lightly engraved, sometimes almost obsolescent, reticulation 78

78 Scutellum in profile weakly convex. Head and thorax with weak metallic tinge, the following parts testaceous to yellow: face, prosternum, usually prepectus, sometimes orbits and marks on mesoscutum. Legs, except coxae partly, yellow. Antenna (Fig. 513) with combined length of pedicellus and flagellum more than twice breadth of mesoscutum; clava elongate, with all its segments much longer than broad .... ***phragmiticola***(p. 284)

— Scutellum in profile moderately to strongly convex. Head and thorax with or without metallic tints, in most species with very restricted or no pale markings. Legs most often with at least the femora more or less infuscate. Antenna sometimes with shorter flagellum or clava 79

79 Head and thorax (at least the mesoscutum partly) with weak to strong metallic tints. Antennal clava 3·25–5·50 times as long as broad 80

— Head and thorax non-metallic. Antennal clava sometimes more than 5·5 times as long as broad 88

80 Antenna (Fig. 514) with clava about 3·25 times as long as broad, hardly as long as funicular segments 3 plus 4; scape yellow over at least the distal half. Body black with bluish metallic tinge, squat. Genitalia (Fig. 646) about 3 times as long as broad. Parasite of Coccoidea, introduced into some European countries .... ***toddaliae***(p. 353)

— Antennal clava at least 3·5 times as long as broad; scape black, or with at most its tip narrowly testaceous. Body metallic or non-metallic. Genitalia 3·0–4·5 times as long as broad 81

81 Head and thorax with at least some yellowish markings. Genitalia (Fig. 647) .... ***forsteri***(p. 343)

— Head and thorax without yellowish markings 82

82 Gaster with yellow subbasal transverse band. Host: *Plagiotrochus fusifex* on *Quercus* spp. ***fusificola***(p. 349)

— Gaster most often black without pale marking, rarely with an indistinct pale spot. Hosts, so far as known, on other plants 83

83 Very small, length 0·7–1·1 mm. Mid and hind tibiae mainly to almost wholly black. Tegulae black. Costal cell of forewing 11·5–13·0 times as long as broad. Antenna (Fig. 516). Host on *Artemisia* spp. .... ***artemisicola***(p. 350)

— Species normally at least 1·2 mm in length. Tibiae varying from wholly yellow to mainly black. Costal cell of forewing 8·5–11·0 times as long as broad. Hosts, so far as known, not on *Artemisia* spp. 84

84 Antenna (Figs 515, 518) with ventral plaque of scape 0·33–0·37 length of scape. Legs dark, mid and hind tibiae mainly to almost wholly black. Tegulae black 85

— Antenna (Figs 519, 520) with ventral plaque of scape 0·43–0·50 length of scape. Tibiae often wholly yellow; hind tibiae sometimes broadly infuscate, occasionally the mid tibiae slightly so medially. Tegulae testaceous to yellow at least anteriorly 87

85 Marginal vein of forewing slightly longer than the costal cell, the latter 10–11 times as long as broad. Host on *Chamaenerion* sp. .... ***epilobii***(p. 348)

— Marginal vein approximately as long as the costal cell, the latter 8·5–10·0 times as long as broad 86

86 Apparently associated with Umbelliferae. Genitalia (Fig. 649). Antenna (Fig. 515) ***brachycerus***(p. 347)

— Host on *Achillea ptarmica*. Genitalia (Fig. 645). Antenna (Fig. 518) .... ***ptarmicae***(p. 346)

87 Host unknown. Genitalia (Fig. 648) .... ***viridinitens***(p. 345)

— Host: Hempitera: Coccoidea. Genitalia (Fig. 644). Antenna (Fig. 520) .... ***coccidiphagus***(p. 352)

88 Stigmal vein of forewing (Fig. 387) very distinctly curved, stigma rather large and tending to be subcircular. Antenna (Fig. 522) with clava short, about 3 times as long as broad, its first and third segments hardly longer than broad .... ***claviger***(p. 334)

— Stigmal vein at most very slightly curved, stigma almost always relatively smaller, sometimes indistinct, or different in shape 89

89 Antennal clava relatively compact, normally 3·0–5·5 times as long as broad (though in *gaus* up to 5·65 times); third claval segment usually not or hardly longer than broad, at all events less than twice as long as broad 90

— Antennal clava *either* at least 6 times as long as broad; *or* with its third segment at least twice as long as broad (the latter feature occurs in nearly all species in this section) 98

90 Antenna (Fig. 521) with combined length of pedicellus and flagellum 2·10–2·23 times breadth of mesoscutum; whorled setae of first funicular segment usually not quite reaching level with tip of third segment. Submedian lines of scutellum equidistant from each other and from sublateral lines, enclosing a space 2·5–2·7 times as long as broad .... ***zoilus***(p. 341)

— Antenna with combined length of pedicellus and flagellum at most 1·6 times breadth of mesoscutum *except* in two species (with pedicellus plus flagellum about 1·8 times breadth of mesoscutum) which have submedian lines of scutellum slightly nearer to sublateral lines than to each other and enclosing a space about twice as long as broad. Whorled setae of funicular segments sometimes relatively longer 91

91 Head and thorax with extensive yellow and tan markings, sometimes mainly yellow; gaster with yellow subbasal transverse band. Antenna (Fig. 517) with whorled setae of first funicular segment reaching only slightly beyond tip of second segment. Legs, except sometimes coxae, yellow .... ***forsteri***(p. 343)

— Head and thorax without yellowish markings except sometimes mouth-edge, upper angle of mesopleuron and dorsellum. Whorled setae of funicular segments often relatively longer. Legs usually darker, coxae and femora often infuscate or black, tibiae sometimes darkened 92

92 Costal cell of forewing about 1·25 times as long as the marginal vein. Gaster with testaceous subbasal spot. Host on *Euphorbia* spp. .... ***capitigenae***(p. 331)

— Costal cell shorter than, or at most hardly longer than, the marginal vein. Gaster usually black, rarely with a pale spot. Hosts on other plants 93

93 Spur of mid tibia slightly shorter than basitarsus. Costal cell of forewing 11·0–11·5 times as long as broad. Hindwing moderatly acute. Antennal clava (Fig. 525) 4·5–5·0 times as long as broad. Hosts: *Cassida* spp. .... ***bruzzonis***(p. 293)

— Spur of mid tibia as long as the basitarsus. Costal cell sometimes relatively shorter. The other characters sometimes different. Hosts (so far as known) otherwise 94

94 Marginal vein equal in length to, or hardly longer than, the costal cell, the latter 9·5–10·0 times as long as broad. Hindwing obtuse or rounded at apex.
Length 1·2–1·8 mm. Antennal clava 3·8–4·5 times as long as broad. Species associated with Umbelliferae .... ***deplanatus***(p. 348)

— Marginal vein distinctly longer than the costal cell, the latter 11–14 times as long as broad. Hindwing slightly to very strongly acute. Species associated with Gramineae 95

95 Antenna (Fig. 527) with first funicular segment 1·5–1·7 times as long as broad, only slightly shorter than the second segment; clava 3·0–3·5 times as long as broad, its first and second segments each with a partial whorl of long dark setae. Very small species, length 0·75–0·85 mm. Tibiae black with at most bases and tips narrowly pale .... ***subanellatus***(p. 336)

— Antenna with first funicular segment varying from very slightly transverse to slightly longer than broad, very distinctly shorter than the second segment; clava 3·80–5·65 times as long as broad. Species sometimes larger. Tibiae sometimes more extensively (occasionally wholly) pale 96

96 Antenna (Fig. 526) with clava 5·40–5·65 times as long as broad; first and second segments of clava with partial whorls of long dark setae. Body length 0·97–1·10 mm. Hindwing strongly acute .... ***gaus***(p. 337)

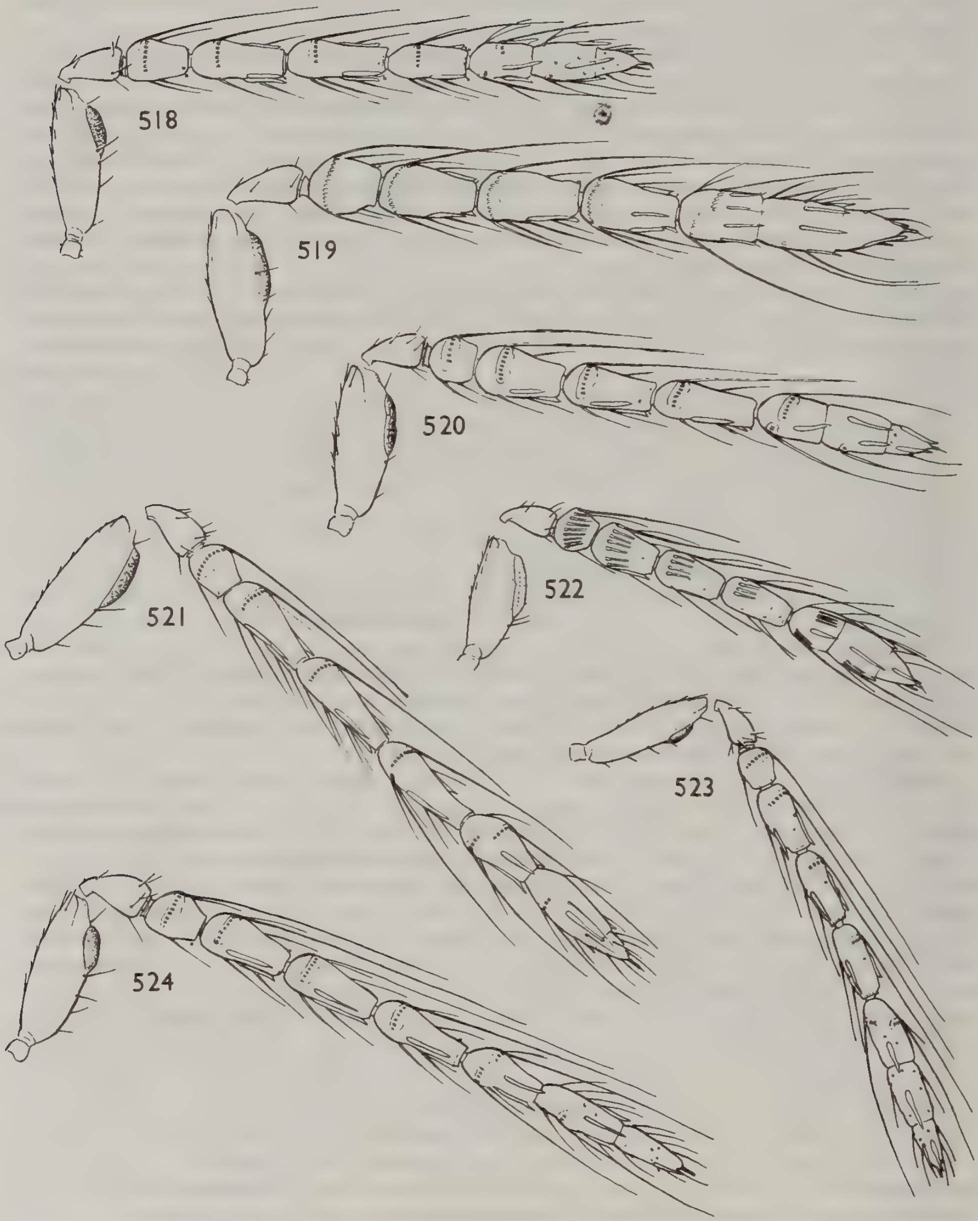
— Antenna with clava 3·8–5·3 times as long as broad, if more than 5 times then body length at least 1·2 mm and hindwing tending to be less strongly acute 97

97 Antenna (Fig. 529); clava without whorls of long dark setae, 3·8–4·5 times as long as broad. Body length 0·70–1·15 mm. Hindwing very strongly acute .... ***phragmitinus***(p. 340)

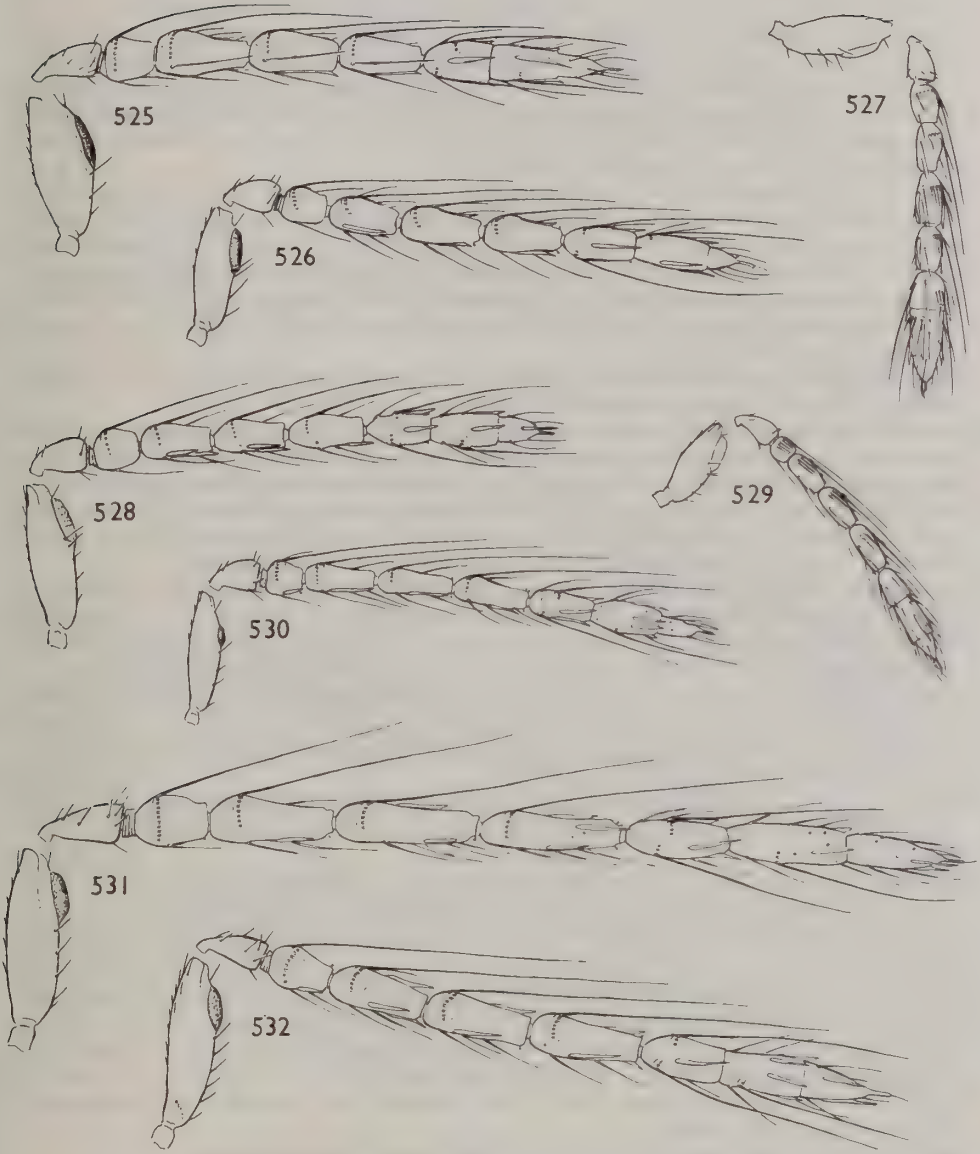
— Antenna (Fig. 528): first and second segments of clava with partial whorls of long dark setae; clava 4·5–5·3 times as long as broad. Species on average larger, length 1·2–1·8 mm. Hindwing slightly to moderately acute .... ***pygmaeus***(p. 338)

98 Antenna (Fig. 530) with ventral plaque of scape extremely short, its length about 0·17 that of the scape. Host: Cecidomyiid dipteron on olive.
Body black, gaster with subbasal testaceous spot .... ***invidus***(p. 354)

— Antenna with ventral plaque of scape at least 0·25 length of scape. Species with hosts, so far as



Figs 518–524 Antennae, males. 518, *Aprostocetus* (*Aprostocetus*) *ptarmicae* sp. n. 519, *A.* (*A.*) *viridinitens* sp. n. 520, *A.* (*A.*) *coccidiphagus* sp. n. 521, *A.* (*A.*) *zoilus* (Walker). 522, *A.* (*A.*) *claviger* (Thomson), paralectotype. 523, *A.* (*A.*) *xanthomelas* sp. n. 524, *A.* (*A.*) *pallipes* (Dalman).



Figs 525–532 Antennae, males. 525, *Aprostocetus* (*Aprostocetus*) *bruzzonis* (Masi). 526, *A.* (*A.*) *gaus* (Walker). 527, *A.* (*A.*) *subanellatus* Graham. 528, *A.* (*A.*) *pygmaeus* (Zetterstedt). 529, *A.* (*A.*) *phragmitinus* (Erdös). 530, *A.* (*A.*) *invidus* (Domenichini), paratype. 531, *A.* (*A.*) *csokakoensis* (Erdös). 532, *A.* (*A.*) *balasi* (Erdös).

known, upon other plants 99

99 Antenna (Fig. 531) with whorled setae of first funicular segment reaching about half-way along the third segment, those of the following segments of comparable length. Body black. Spur of mid tibia slightly shorter than the basitarsus .... ***csokakoensis***(p. 311)

— Antenna with whorled setae of first funicular segment reaching level with or beyond tip of third segment, setae of the following segments equally long. Body black or yellow-marked 100

100 Head and thorax extensively to mainly yellowish; basal half or more of gaster yellowish; legs, including coxae mainly or wholly, yellow. Thorax 1·25–1·30 times as long as broad. Scutellum 1·4–1·6 times as broad as long. Antenna (Fig. 532) .... ***balasi***(p. 310)

— Head and thorax usually entirely or almost entirely black, if somewhat yellowish-marked then *either* gaster with at most a yellowish subbasal spot or band, *or* thorax relatively longer and scutellum less transverse. Legs often relatively darker 101

101 Thorax 1·15–1·20 times as long as broad. Scutellum 1·5–1·6 times as broad as long. Gaster with large subbasal testaceous spot or transverse band. Legs, except coxae more or less, yellow. Gaster oval. Antenna (Fig. 523) .... ***xanthomelas***(p. 309)

— Thorax 1·35–1·50 times as long as broad. Scutellum usually less transverse than in the above. Gaster sometimes with yellowish subbasal marking as in *xanthomelas*, but more often immaculate or with indistinct pale spot. Legs sometimes relatively darker. Gaster usually oblong 102

[Note. The species that follow are very difficult to separate and the key needs to be used with caution as their variation is not yet well known.]

102 Gaster with subbasal yellowish transverse band, or a relatively large yellowish spot. Legs from trochanters on usually yellow; at most the hind femora blackish over about two-thirds of their length; fore coxae often more or less yellow, sometimes also the mid and hind coxae 103

— Gaster black, or with at most a relatively inconspicuous testaceous subbasal spot. Legs often relatively darker; at least the hind femora broadly black, often the other femora more or less darkened; coxae usually black; hind tibiae occasionally more or less infuscate 105

103 Antenna (Fig. 533) with scape 3·0–3·7 times as long as broad; ventral plaque 0·34–0·40 length of scape. Spur of mid tibia about 0·9 length of basitarsus. Host on *Salix* spp. .... ***abydenus***(p. 316)

— Antenna with scape usually 2·70–2·85 times as long as broad, rarely as much as 3 times; ventral plaque of scape 0·25–0·30 length of scape. Spur of mid tibia 0·75–0·90 length of basitarsus 104

104 Antenna (Fig. 534) with ventral plaque of scape 0·25–0·28 length of scape. Tegulae usually partly to mainly testaceous. Hosts on *Populus* spp. .... ***femoralis***(p. 318)

— Antenna (Fig. 535) with ventral plaque of scape 0·28–0·30 length of scape. Tegulae fuscous to black. Hosts on *Quercus* spp. .... ***cerricola***(p. 306)

105 Hind femora stout, about 3·7 times as long as broad. Head slightly broader than mesoscutum. Antenna (Fig. 536) with whorled setae of first funicular segment reaching only to near tip of third segment .... ***incrassatus***(p. 327)

— Hind femora less stout. Head occasionally a little broader than mesoscutum but most often not broader, or even slightly narrower. Antenna with whorled setae usually relatively longer 106

106 Hind coxae almost vertical. Head as broad as, or a little broader than, the mesoscutum. Antenna (Fig. 537) .... ***constrictus***(p. 304)

— Hind coxae distinctly oblique. Head variable but often slightly narrower than the mesoscutum 107

107 Thorax 1·6–1·7 times as long as broad. Head about 1·1 times as broad as mesoscutum. Antenna (Fig. 539) with combined length of pedicellus and flagellum 1·7–1·9 times breadth of mesoscutum. Genitalia (Fig. 625). Host: *Helicomyia saliciperda* on *Salix* spp. .... ***tymber***(p. 313)

— Thorax 1·45–1·50 times as long as broad. Head sometimes not broader than mesoscutum. Hosts usually on other plants 108

108 Head (when undistorted) as broad as or even a little broader than mesoscutum 109

— Head at least slightly narrower than mesoscutum 110

109 Hosts: Hemiptera: Coccoidea on *Picea abies*. Genitalia (Fig. 631) .... ***trjapitzini***(p. 326)

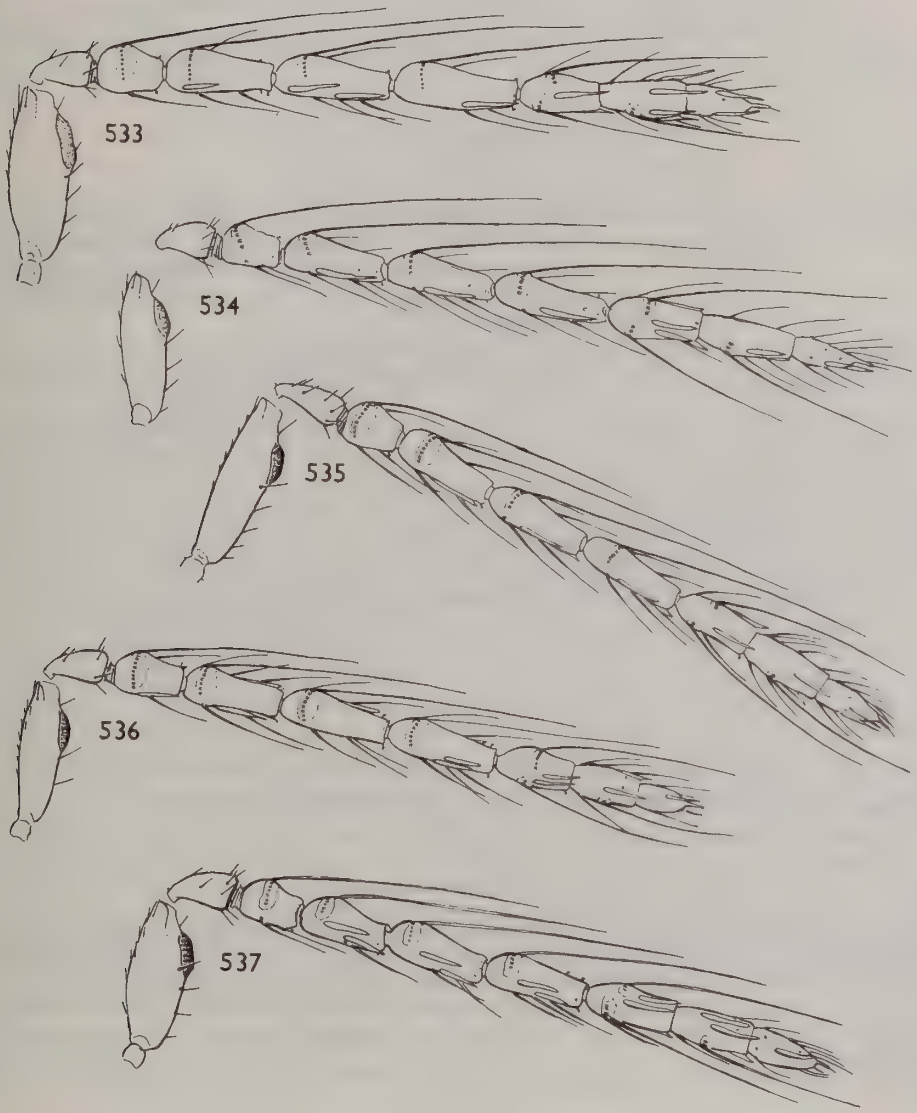
— Hosts: Diptera: Cecidomyiidae on *Betula* spp. and *Salix* spp. .... ***pallipes***(p. 332)

110 Spur of mid tibia fully as long as, or even very slightly longer than, the basitarsus. Antenna (Fig. 541). Species associated with *Pinus* spp. .... ***micantulus***(p. 333)

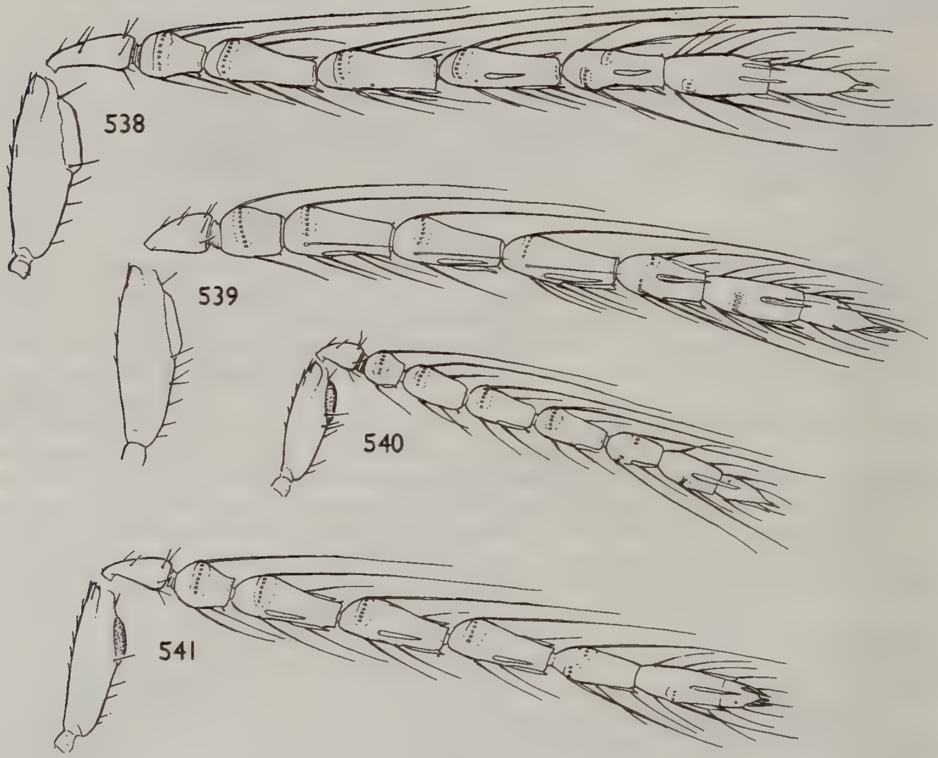
— Spur of mid tibia 0·87–0·90 length of basitarsus in *aethiops*, virtually as long as basitarsus in *lycidas*. Hosts mostly on deciduous trees or shrubs 111

111 Hosts chiefly on *Quercus* spp. but possibly also on other trees and shrubs (though not on *Fagus* sp.) .... ***aethiops***(p. 329)

— Host: *Hartigiola annulipes* on *Fagus* sp. Antenna (Fig. 540) .... ***lycidas***(p. 327)



Figs 533–537 Antennae, males. 533, *Aprostocetus* (*Aprostocetus*) *abydenus* (Walker). 534, *A.* (*A.*) *femoralis* (Sundby) paralectotype. 535, *A.* (*A.*) *cerricola* (Erdös). 536, *A.* (*A.*) *incrassatus* Graham. 537, *A.* (*A.*) *constrictus* sp. n.



Figs 538–541 Antennae, males. 538, *Aprostocetus* (*Aprostocetus*) *metra* (Walker). 539, *A.* (*A.*) *tymber* (Walker). 540, *A.* (*A.*) *lycidas* (Walker). 541, *A.* (*A.*) *micantulus* (Thomson).

The *asperulus*-group

Differs from the *caudatus*-group as follows. Mid lobe of mesoscutum with 2 or more rows of adnotaular setae on each side; sculpture stronger, at least slightly raised. Hind coxae with reticulation slightly to very distinctly raised. Antennal scape of ♂ with ventral plaque situated above the middle.

Two species certainly belong to this group: *asperulus* and *lamiicidus* Kerrich (1963: 361–363), the latter described from Nigeria. Provisionally a third species, *diplosidis*, is placed here although it may be a discordant element.

Aprostocetus (Aprostocetus) asperulus (Graham)

(Figs 262, 501, 574, 702)

Tetrastichus asperulus Graham, 1981*a*: 2–5. Lectotype ♀, MADEIRA: São Martinho, Pico das Arrudas, 26.v.1980 (*Graham*) (UM), designated by Graham (1981*b*: 20) [examined].
Aprostocetus asperulus (Graham) Graham, 1983: 38.

A full description of both sexes has already been published (Graham, 1981*a*). Antenna ♀ (Fig. 262), ♂ (Fig. 501), genitalia ♂ (Fig. 574), anelli ♀ (Fig. 702).

MATERIAL EXAMINED

2 ♂, 30 ♀. **Canary Islands**: 3 ♀, Tenerife, Arona, 13–26.ii.1977 (*T. Wolschrijn*) (MJG). **Cape Verde**

Islands: 1 ♀, Ribeira Grande, 6.xi.1980 (*van Hoof*) (MJG). **India**: 2 ♀, Karnataka, Bangalore, 3.xi.1979; 1 ♀, Uttar Pradesh, Dehra Dun, 20.x.1979 (*Bouček*) (BMNH). **Madeira**: 2 ♂, 20 ♀ (holotype and paratypes), São Martinho, 8.v.1980, 9.v.1980, 21.v.1980, 26.v.1980; 6 ♀, near João do Prado, east of Poiso, 26.vii.1982; 1 ♀, Ribeiro do Inferno, 3.viii.1982 (*Graham*) (BMNH). **Trinidad**: 1 ♀, Caroni plantation, 2.vii.1976 (*J. Noyes*).

HOSTS. Unknown.

Aprostocetus (Aprostocetus) diplosidis Crawford

(Figs 511, 575, 703)

Aprostocetus diplosidis Crawford, 1907: 180–181; Peck, 1951: 451; Peck, 1963: 157; Priore & Viggiani, 1965*a*: 12–19, figs 10–16; Burks, 1967*a*: 757, 759; Burks, 1979: 1003. Lectotype ♀, U.S.A.: Louisiana, Baton Rouge, designated by Burks (1967*a*: 759) [not examined].
Tetrastichus diplosidis (Crawford) Domenichini, 1966*a*: 159; 1966*b*: 28.

Further references are given by Peck (1963) and need not be repeated here. The species has been redescribed and figured in detail by Priore & Viggiani (1965*a*). A few extra notes are given below.

♀. Antenna with pedicellus plus flagellum approximately equal to or slightly greater than breadth of mesoscutum; pedicellus twice as long as broad, about equal in length to F1; anelli (Fig. 703); F1 2·0–2·5 times, F2 1·5–1·7 times, F3 1·0–1·4 times as long as broad; clava slightly broader than F3, 2·3–2·5 times as long as broad, about as long as F2 plus F3. Mid lobe of mesoscutum slightly shiny, with extremely fine, superficial or lightly engraved reticulation, with areoles mostly 3–4 times as long as broad. Scutellum moderately shiny, with reticulation like that of mid lobe of mesoscutum; setae slightly longer than in *asperulus*, their length nearly equal to distance between submedian lines. Propodeum even shorter than in *asperulus*, its surface slightly more dull; median carina not distinctly indicated; callus with only 2 setae. Forewing not reaching tip of gaster; speculum closed below, basal vein with 2–4 setae; wing beyond speculum rather more thickly pilose than in *asperulus*. Gaster fully twice, or more than twice, as long as head plus thorax, 5·3–7·0 times as long as broad, very strongly acuminate; last tergite 2·2–2·8 times as long as broad; ovipositor sheaths well exserted, to a length nearly or quite equal to length of postcercale; tip of hypopygium at 0·35–0·40 length of gaster. Length 1·6–2·5 mm. Other features as in *asperulus*.

♂. Antenna (Fig. 511) with scape slightly shorter than eye, about 3 times as long as broad, reaching median ocellus, with ventral plaque nearly half length of scape and placed mainly in upper half; pedicellus plus flagellum about 1·7 times breadth of mesoscutum; pedicellus nearly twice as long as broad, distinctly longer than F1; funicle slightly stouter than pedicellus, nearly filiform; F1 shorter than F2 and quadrate, following segments subequal in length, each about twice as long as broad; clava not broader than funicle, about 5 times as long as broad, slightly longer than F3 plus F4; whorled setae very long, those of F1 reaching tip of F4. Propodeum medially about as long as dorsellum. Gaster oblong, about as long as but narrower than thorax, with ventral plica. Genitalia (Fig. 575).

MATERIAL EXAMINED
2 ♂, 20 ♀. Almost cosmopolitan in warm temperate and tropical regions; introduced into Europe (**Italy**) from U.S.A.

HOST. *Contarinia sorghicola* (Coquebert) on sorghum.

The *aurantiacus*-group

Ventral plaque of ♂ scape placed in upper half of scape. Propodeum medially about as long as or slightly longer than dorsellum; callus with 2 or (often) more setae. Malar sulcus with a moderate-sized subtriangular fovea below eye. Second tooth of ♂ digitus very small or rudimentary. Other characters as in the *caudatus*-group.

HOSTS. Hymenoptera: Cynipidae (but host of *lacunatus* unknown).

Aprostocetus (Aprostocetus) eurytomae (Nees) **comb. n.**

(Figs 264, 266, 483, 579, 678)

Eulophus Eurytomae Nees, 1834: 431. Syntypes, ? POLAND: Wroclaw (destroyed). NEOTYPE ♀, FRANCE: Bouches du Rhône, Fonscolombe, reared 11.vii.1982 from gall of *Diplolepis eglanteriae* (Hartig) on *Rosa agrestis* (*Graham*) (BMNH), here designated [examined].
[*Tetrastichus alveatus* Graham; Domenichini, 1966*b*: 17. Misidentification.]
[*Tetrastichus cyniphidum* (Ratzeburg); Erdös, 1971: 239. Misidentification.]

This species has not hitherto been recognized as that described by Nees under the name *eurytomae*. His description is quite good and, combined with the host mentioned (clearly a member of the *Diplolepis centifoliae* complex), makes its identity certain. I have not been able to obtain any reared material from near the presumed type-locality, hence I designate a neotype from material reared in France which both fits the original description and host data.

♀. Head 1·12–1·15 times as broad as mesoscutum, 2·3–2·4 times as broad as long; temples 0·10–0·15 length of eyes; POL about 1·5 OOL, OOL about 1·5 OD. Eyes 1·3 times as long as broad, separated by hardly more than their length. Malar space approximately 0·5 length of eye, sulcus with triangular fovea which extends about 0·35 length of gena. Mouth 1·2 malar space. Sides of face, near malar sulcus, with several rather large punctures. Vertex with numerous dark setae whose length is nearly equal to OD. Antenna (Fig. 266) with scape about 0·8 length of eye, not quite reaching median ocellus; pedicellus plus flagellum 1·20–1·35 breadth of mesoscutum; pedicellus 2·1–2·4 times as long as broad, slightly shorter than or as long as F1; funicle proximally hardly stouter than pedicellus, hardly thickening distad, its segments decreasing slightly in length, F1 2·0–2·5 times, F2 about 1·7 times, F3 1·2–1·5 times as long as broad; clava somewhat broader than F3, 2·7–2·8 times as long as broad, about as long as F2 plus F3, with C1 as long as broad, C2 hardly shorter, C3 shorter than C2, spine about 0·25 length of C3 with apical seta slightly shorter than spine; sensilla not very numerous, irregularly uniseriate, or partly biseriate on proximal segments of funicle, moderately long, decumbent. Thorax 1·4–1·5 times as long as broad; propodeal slope about 50°. Pronotum extremely short, crescentic, with a row of setae near hind margin, these nearly as long as scutellar setae. Mid lobe of mesoscutum about as long as broad, rather strongly convex, relatively dull, with extremely fine superficial reticulation having areoles mostly 3–4 times as long as broad; median line absent or, occasionally, partly traceable as a smoother line; 3–5 adnotaular setae on each side, hindmost as long as scutellar setae. Scutellum 1·10–1·15 times as broad as long, about 0·7 as long as mesoscutum, sculptured like mesoscutum but more finely and with shorter areoles; submedian lines about equidistant from each other and from sublateral lines, diverging slightly caudad, enclosing a space 2·6–3·0 times as long as broad; setae subequal, their length slightly greater than distance between submedian lines, anterior pair slightly before or in the middle. Dorsellum 2·1–2·3 times as broad as long, hind edge curved. Propodeum medially about as long as dorsellum, moderately shiny, with fine, very slightly raised reticulation; median carina thin and sharp, hardly at all expanded posteriorly; callus with 2–3 setae. Legs of medium length; hind coxae oblique, about twice as long as broad, with hind edge curved; hind femora about 4 times as long as broad; spur of mid tibia about 0·7 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·2–2·3 times as long as broad, similar to that of *aurantiacus* (Fig. 271), reaching tips of ovipositor sheaths or hardly beyond; costal cell shorter than *M*, 8–12 times as long as broad, with row of setae on its lower surface sparse, often broken medially; *SM* with 3–5 dorsal setae; *M* rather thin, 3·8–4·2 times length of *ST*, its front edge with 10–16 setae; *ST* at about 50°, thin proximally but gradually expanding to form a distinct stigma; *PM* a distinct stub; speculum moderate-sized, hardly extended below *M*, closed below; wing beyond it only moderately thickly pilose, somewhat more thickly distad; just beyond the stigma there is usually a small bare spot; cilia 0·15–0·28 length of *ST*. Hindwing obtuse; cilia 0·20–0·38 breadth of wing. Gaster (Fig. 264) long-ovate to sublanceolate, distinctly longer than head plus thorax, fully as broad as thorax, 2·0–2·4 times as long as broad, acuminate; last tergite 1·3–1·5 times as long as broad; ovipositor sheaths plus postcercale 0·40–0·55 length of hind tibia, sheaths 0·5–0·8 length of postcercale; longest seta of each cercus about 1·7 length of next longest, slightly sinuate; tip of hypopygium (Fig. 678) slightly before half length of gaster.

Body in nominotypical form black, with hardly perceptible bluish metallic tinge; upper angle of mesopleuron, dorsellum at sides or wholly, and sometimes mouth-edge narrowly, yellowish; base of gaster dorsally, sometimes as much as half the gaster, reddish; ventral surface of gaster more or less yellowish to reddish at base and sides; in paler forms the posterior segments have partial or complete pale transverse bands. Antennal scape and pedicellus black, the former sometimes with base reddish; flagellum brown to fuscous. Legs yellowish with bases of coxae black, fore tarsi brownish, also fourth segment of mid and hind tarsi. Tegulae testaceous, sometimes with hind edge darker. Wings hyaline, venation yellowish.

Paler forms from France, believed to be conspecific, have the following parts reddish yellow: mouth-edge and lower part of genae narrowly to broadly, often sides of face and frons; sometimes a spot on each side of pronotum; marks at anterior angles of mid lobe of mesoscutum and the posterior part of this sclerite, these marks sometimes joined along the notauli; areas of scutellum, sometimes all except a spot in the middle; sometimes sides of propodeum and metapleuron more or less; prepectus; sometimes mesopleuron more or less; a transverse band across basal tergite of gaster, or the whole tergite, basal part of last tergite, often a transverse band on some or all of the middle tergites (usually interrupted medially but sometimes complete). Legs as in nominotypical form but coxae sometimes more extensively black proximally, occasionally hind femora slightly infuscate proximally.

Darker forms (which appear to be the usual in northern Europe) have body black with at most dorsellum and mouth-edge pale; all coxae black, femora narrowly to very broadly black proximally, tarsi darker, tegula sometimes brown to black. Some specimens of this form are large, and have 3–4 (in one 7) setae on propodeal callus. Size very variable, length 1·1–2·5 mm.

♂. Antenna (Fig. 483) with scape 2·5–2·7 times as long as broad, its ventral plaque (0·4–) 0·45–0·60 length of scape and placed hardly above the middle; pedicellus plus flagellum 1·80–1·85 breadth of mesoscutum; pedicellus virtually twice as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, filiform or tapering very slightly distad; F1 hardly more than half as long as F2, 1·1–1·3 times as long as broad, following segments subequal in length, F2 2·0–2·2 times, F3 2·1–2·2 times, F4 2·1–2·4 times as long as broad; clava 5·0–6·5 times as long as broad, slightly longer than F3 plus F4; whorled setae only moderately long, those of F1 reaching slightly beyond tip of F2. Propodeum slightly longer than dorsellum. Gaster elliptic, as long as but narrower than thorax, with ventral plica. Genitalia (Fig. 579).

Body black, with facial sutures and upper angle of mesopleuron yellowish. Coxae mainly to wholly black, legs otherwise yellow, or with femora more or less infuscate proximally. Length 1·0–1·5 mm.

MATERIAL EXAMINED

13 ♂, 44 ♀. **Czechoslovakia**, **France**, **Morocco**, **Netherlands**, **Norway**.

HOSTS. *Diplolepis mayri* (Schlechtendal), *D. eglanteriae* (Hartig), *D. spinosissimae* (Giraud).

COMMENTS. Nees (1834: 431) stated that he had reared *Eulophus eurytomae* from the same galls which had produced his *Eurytoma rosae* and referred to his note on p. 415 regarding the rearing of the latter. From this note it is clear that the galls could have been those of either *Diplolepis nervosa* (Curtis), *D. centifoliae* (Hartig) or *D. eglanteriae* (Hartig). These species of *Diplolepis* had not been distinguished when Nees wrote and even now identification can be critical. The neotype of *Eulophus eurytomae* agrees well with Nees' description, as does the gall of *D. eglanteriae* from which it was reared.

Tetrastichus avetlanae Kostjukov, 1978: 126–127, from Armenia may be a dark form of *eurytomae*; I have examined a paratype.

Aprostocetus (Aprostocetus) aurantiacus (Ratzeburg) **syn. rev., comb. rev.**

(Figs 263, 265, 484, 578)

? *Geniocerus cyniphidum* Ratzeburg, 1848: 175. Syntypes ♂, ? AUSTRIA (destroyed).

Entedon aurantiacus Ratzeburg, 1852: 211. Lectotype ♀, ? AUSTRIA (*Tischbein*) (NM), designated by Domenichini (1966*a*: 163–164) [examined]. [Synonymized with *cyniphidum* by Domenichini, 1966*a*: 163.]

[*Entedon leptoneurus* Ratzeburg, 1852: 214. Misidentification.]

Aprostocetus aurantiacus (Ratzeburg) Graham, 1961*a*: 59.

Tetrastichus cyniphidum (Ratzeburg) Domenichini, 1966*a*: 163–164; 1966*b*: 27; Erdös, 1971: 239.

Tetrastichus rosarum (Förster MS.) Erdös, 1971: 233. Syntypes, WEST GERMANY: Aachen (NM).

Geniocerus cyniphidum was described by Ratzeburg from 2 males reared by Tischbein from *Cynips* [=*Diplolepis*] *eglanteriae* (Hartig). From the brief description and the host cited one can presume that *cyniphidum* belonged to the present species-group, but it could have been identical with *aurantiacus* or *eurytomae*, or perhaps even represented another species of the group. As the original material of *cyniphidum* is destroyed, and males are so difficult to associate, I reject this name in favour of *aurantiacus* Ratzeburg, the description and host of which leaves no doubt about its identity, which is confirmed by the extant lectotype.

♀. Differs from that of *eurytomae* in having head 1·25–1·40 times as broad as mesoscutum; POL 1·1–1·3 OOL; malar space 0·35–0·40 length of eye, fovea of sulcus extending nearly half length of gena; antenna (Fig. 265) with pedicellus plus flagellum at most 1.1 breadth of mesoscutum; pedicellus slightly to rather distinctly longer than F1; funicular segments subequal in length or decreasing very slightly, F1 1·4–1·7 times, F2 1·5–1·6 times, F3 1·2–1·6 times as long as broad; clava 2·1–2·3 times as long as broad; scutellum with submedian lines rather closer together, tending to be parallel, enclosing a space 3·0–4·0 times as long as broad; propodeum medially fully as long as, or a little longer than, the dorsellum, callus with 4–6 setae. Forewing (Fig. 271) about 2·1 times as long as broad; costal cell 10–15 times as long as broad; *M* slightly thicker; gaster (Fig. 263) short-ovate, from about as long as thorax to nearly as long as head plus thorax, 1·25–1·70 times as long as broad, acute but not acuminate; last tergite at least slightly shorter than its basal breadth; ovipositor sheaths not, or only very slightly, exserted.

Body black, sometimes with extremely weak bluish tinge; gaster in paler forms more or less testaceous to yellow at the base, sometimes over proximal half or more; upper angle of mesopleuron narrowly, usually sides or whole of dorsellum, and facial sutures, testaceous to yellow. Antennal scape black, usually pale beneath at tip; pedicellus black, usually testaceous at tip and often beneath; flagellum brownish testaceous to fuscous, the clava sometimes paler than the rest. Coxae black, legs otherwise testaceous to yellowish with fore and mid femora usually more or less infuscate proximally, hind femora sometimes pale but often with proximal third or more black; fourth tarsomere brown, third sometimes brownish. Tegulae yellowish with hind edge dark. Wings hyaline, venation yellowish to brown. Length 1·1–1·6 mm.

♂. Differs from that of *eurytomae* in having head 1·20–1·25 times breadth of mesoscutum; antennal scape (Fig. 484) 2·5–3·0 times as long as broad, with ventral plaque 0·30–0·35 length of scape and placed wholly in upper half; pedicellus plus flagellum 1·70–1·75 times breadth of mesoscutum; submedian lines of scutellum rather closer together (as in ♀). Genitalia (Fig. 578).

MATERIAL EXAMINED

5 ♂, 25 ♀. **Austria**, **Czechoslovakia**, **France**, **Great Britain**, **Hungary**, **Spain**.

HOSTS. *Diplolepis eglanteriae* (Hartig), *D. mayri* (Schlechtendal).

Aprostocetus (Aprostocetus) lacunatus sp. n.

(Fig. 270)

♀. Head 1·05 times as broad as mesoscutum, 2·5 times as broad as long; temples 0·12–0·15 length of eyes; POL about 1·5 OOL, OOL 1·7–1·8 OD. Eyes about 1·25 times as long as broad, separated by 1·5 times their length, moderately thickly clothed with very short pubescence. Malar space 0·66–0·72 length of eye, sulcus with a triangular fovea extending 0·22–0·30 its length. Mouth hardly greater than malar space. Head moderately shiny, with excessively fine superficial reticulation; length of setae of vertex about equal to OD. Antenna (Fig. 270) with scape about 0·85 length of eye, about 3 times as long as broad, nearly reaching median ocellus; pedicellus plus flagellum 1·1 breadth of mesoscutum; pedicellus virtually twice as long as broad, slightly shorter than F1; funicle distinctly stouter than pedicellus, filiform, its segments subequal in length or decreasing very slightly, F1 1·8–2·0 times, F2 1·7–2·0 times, F3 1·4–1·5 times as long as broad; clava slightly broader than funicle, 2·0–2·3 times as long as broad, somewhat shorter than F2 plus F3, pointed, with C1 not longer than broad, occupying half the total length, C2 much shorter and transverse, C3 still shorter, spine short and thick, with apical seta as long as spine; sensilla moderately numerous, in one very irregular row or two rows on each segment, about half as long as the segments, decumbent with tips projecting slightly. Thorax about 1·5 times as long as broad; propodeal slope 60°. Pronotum crescentic, 0·25–0·30 as long as mesoscutum, with somewhat coarse, very slightly raised reticulation, with several short setae at sides and a row of longer ones near hind margin. Mid lobe of mesoscutum about as broad as long, moderately convex, not very shiny, with extremely fine superficial or very slightly raised reticulation having areoles 2–3 times as long as broad; median line very fine and weak; 6–7 adnotaular setae on each side, the hindmost as long as scutellar setae. Scutellum about 1·3 times as broad as long, strongly convex, sculptured like mesoscutum but more finely and with shorter areoles; submedian lines about equidistant from each other and from sublateral lines, enclosing a space 2·0–2·3 times as long as broad; setae subequal in length, this nearly equal to distance between submedian lines, anterior pair slightly behind middle. Dorsellum nearly semicircular, 2·0–2·5 times as broad as long. Propodeum medially as long as dorsellum, shiny, with fine, very slightly raised reticulation; median carina thin and sharp, but expanded to form a triangular area in posterior third; spiracles moderate-sized, oval, very close to metanotum; callus with 3–5 setae. Legs of medium length and thickness; hind coxae oblique, slightly more than twice as long as broad, with hind edge strongly curved; hind femora 3·8–4·0 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about 2·2 times as long as broad, reaching slightly beyond tip of gaster; costal cell slightly shorter than *M*, 8·5–9·0 times as long as broad, its lower surface with a complete (in one ♀ partly double) row of setae; *SM* with 4–5 dorsal setae; *M* slightly thickened, 3·9–4·0 times length of *ST*, its front edge with 14–16 setae; *ST* at about 45°, straight, thin at base but expanding slightly to half its length, then expanding more strongly to form a small oblong stigma; *PM* a short stub; speculum small, hardly extending below *M*, closed below; wing beyond it moderately thickly pilose; cilia 0·2–0·3 length of *ST*. Hindwing obtuse or subobtuse; cilia 0·19–0·25 breadth of wing. Gaster ovate, slightly longer than head plus thorax, hardly broader than thorax, about twice as long as broad, acute; last tergite about as long as broad; ovipositor sheaths projecting to a length about equal to one-third that of last tergite; longest seta of each cercus about 1·5 length of next longest, slightly curved; tip of hypopygium at about half length of gaster.

Body black, non-metallic. Antennal scape testaceous beneath at apex, flagellum brown. Coxae, and femora mainly, black; tips of femora, tibiae partly or wholly, and tarsi mainly, testaceous; tarsi darker distally, their fourth segment fuscous; hind tibiae fuscous except at base and tips, fore and mid tibiae either testaceous or else broadly infuscate medially. Wings subhyaline, venation brownish testaceous to brown. Length 2·0–2·3 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **Great Britain**: England, Buckinghamshire, Hell Coppice, 30.viii.1959 (*Graham*) (BMNH).

Paratype. **Great Britain**: 1 ♀, England, Staffordshire, Cannock Chase, 8.ix.1978 (*Graham*) (BMNH).

HOSTS. Unknown.

Aprostocetus (Aprostocetus) dauci sp. n.

(Figs 267, 462, 582)

♀. Head very slightly broader than mesoscutum, nearly 2·5 times as broad as long; POL 1·35–1·50 OOL, OOL about 1·8 OD. Eyes about 1·25 times as long as broad, separated by 1·3–1·4 times their length. Malar space nearly or about 0·6 length of eye, sulcus nearly straight, expanded just below eye to form a triangular fovea which is longer than broad and extends 0·35–0·45 length of gena. Mouth about 1·3 malar space. Length of setae of vertex slightly less than OD. Antenna (Fig. 267) with scape much shorter than eye but nearly or just reaching lower edge of median ocellus; pedicellus plus flagellum 1·1–1·2 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, at least very slightly but sometimes distinctly shorter than F1; funicle stout, about 1·5 times as stout as pedicellus, filiform or virtually so, its segments decreasing very slightly in length, F1 1·9–2·5 times, F2 1·9–2·0 times, F3 1·50–1·75 times as long as broad; clava slightly broader than funicle, slightly to distinctly shorter than F2 plus F3, 2·3–2·7 times as long as broad, bluntly pointed, with C1 not or hardly longer than broad, C2 a little shorter and slightly transverse, C3 much shorter, spine about 0·33 length of C3, with apical seta slightly shorter than spine; sensilla moderately numerous, in 2 sometimes partly overlapping rows on each segment of funicle, in 1 or 2 rows on segments of clava, rather short, the subbasal ones of each segment with tips projecting somewhat, distal ones decumbent. Thorax about 1·3 times as long as broad; propodeal slope 60°–70°. Pronotum very short. Mid lobe of mesoscutum slightly broader than long, moderately convex, rather dull, with excessively fine superficial reticulation having most areoles 3–4 times as long as broad; median line very fine but traceable in some lights, sometimes fairly distinct; 3–6 adnotaular setae on each side. Scutellum about 1·2 times as broad as long, moderately strongly convex, more finely sculptured than mesoscutum and with shorter areoles; submedian lines equidistant from each other and from sublateral lines, or very slightly nearer the latter, enclosing a space about 2·5 times as long as broad; setae subequal, anterior pair in or very slightly behind middle. Dorsellum about 3 times as broad as long, hind edge obtusely angulate or curved. Propodeum nearly 3 times as broad as its length at sides, broadly and deeply emarginate, medially 0·5–0·6 length of dorsellum, with very fine, superficial reticulation; median carina very short, foveate at front end. Legs of medium length and thickness; hind coxae oblique, about twice as long as broad; hind femora nearly or about 4 times as long as broad; spur of mid tibia 0·85–0·90 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·20–2·35 times as long as broad; costal cell somewhat shorter than *M*, 9–10 times as long as broad, the row of setae on its lower surface usually widely broken medially; *SM* with 4–7 dorsal setae; *M* rather thick proximally but tapering distad, 4·0–4·8 times length of *ST*, its front edge with 12–16 setae; *ST* at 45°–50°, thin proximally but expanding gradually to form a moderate-sized subrhomboidal stigma; *PM* a short stub; speculum small to moderate-sized, extending as a very narrow strip below *M* as far as *ST*; a narrow zone around *ST* also tends to be bare; cilia 0·20–0·28 length of *ST*. Hindwing obtuse or rounded; cilia 0·2–0·3 breadth of wing. Gaster lanceolate, 1·5–1·7 times as long as head plus thorax, as broad as or slightly broader than thorax, including ovipositor sheaths 2·4–3·0 times as long as broad, acute and acuminate; last tergite 1·1–1·7 times as long as broad; ovipositor sheaths projecting by 0·55–0·65 length of last tergite; sheaths plus postcercale 0·60–0·72 length of hind tibia; longest seta of each cercus nearly twice length of next longest, kinked; tip of hypopygium at 0·33–0·40 length of gaster.

Black; mouth-edge sometimes narrowly testaceous, sides or whole of dorsellum testaceous; body non-metallic, or head and thorax with at most a hardly perceptible bluish tinge, gaster slightly bronze. Antennae black. Coxae black; trochanters partly yellow; femora black, their tips broadly yellow; tibiae yellow or testaceous; fore tarsi testaceous at base darkening to fuscous at tips, mid and hind tarsi pale yellow with third segment brownish, fourth fuscous (second brown in dark ♀). Tegulae black, testaceous anteriorly. Wings hyaline, venation testaceous to brown. Length 1·9–2·7 mm.

♂. Antenna (Fig. 462) with scape slightly shorter than eye, with ventral plaque more than one-third length of scape; pedicellus plus flagellum about 1·8 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, a little longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 hardly more than half as long as F2, subquadrate, following segments equal in length, each slightly more than twice as long as broad; clava hardly as broad as F4, fully as long as F3 plus F4, nearly 5·5 times as long as broad, with C1 and C2 each about twice as long as broad, C3 much shorter; whorled setae long, those of F1 reaching nearly to tip of F3. Genitalia (Fig. 582): digitus with two teeth on hind margin, one short, the other very short.

MATERIAL EXAMINED

1 ♂, 13 ♀. Holotype ♀, **Yugoslavia**: Slovenia, Rudovliica, reared 25–28.viii.1972 from *Lasioptera carophila* on *Daucus carota* (*H. J. Vlug*) (ITZ).

Paratypes. **Czechoslovakia**: 1 ♀, Bohemia, Pohořany nr Litoměřice, 9.vi.1954 (*Bouček*) (BMNH). **France**: 1 ♀, Aveyron, St Jean-du-Bruel, 19.viii.1975; 1 ♀, Dordogne, Castels, 5.viii.1974; 2 ♀, Gard, W. of Alzon, on *Daucus carota* flowers, 9.viii.1975, 1 ♀, Domessargues, near Alès, 27.vii.1974; Vaucluse, 1 ♀, between Lacoste and Ménerbes, 27.vii.1975, 1 ♀, St Pierre de Vassols, 11.viii.1976 (*Graham*) (BMNH). **Greece**: 1 ♀, Corfu, Dassia, end of v.1971 (*B. van Aartsen*) (MJG). **Spain**: 1 ♀, Balearic Is., Mallorca, Ponto de Pollensa, 10–16.viii.1969 (*A. C. & W. N. Ellis*) (MJG). **Yugoslavia**: 1 ♂, same data as holotype, 1 ♀, same locality, reared 1–9.ix.1972 from *Kiefferia pericarpiicola* (*H. J. Vlug*) (MJG); 1 ♀, Biograd na Moru, 13.vii.1968 (*Bouček*) (BMNH).

HOSTS. *Lasioptera carophila* F. Löw and *Kiefferia pericarpiicola* (Bremi) (=*pimpinellae* F. Löw).

Aprostocetus (Aprostocetus) grandii (Domenichini) **comb. n.**

(Figs 268, 461, 581)

Aprostocetus sp.; Principi, 1957: 35–65.

Tetrastichus grandii Domenichini, 1966*a*: 174–175; 1966*b*: 33–34. Holotype ♀, ITALY: Bologna, 1957, from gall of *Putoniella marsupialis* (*G. Grandi*) (MHN) [examined].

Domenichini (1966*a*: 174) gave a good description of both sexes. One small discrepancy needs correction: he described the eyes as being 2·5 times as long as broad, whereas they are about 1·35 times as long as broad. Antenna ♀ (Fig. 268); antenna ♂ (Fig. 461); genitalia ♂ (Fig. 581). The head and thorax are non-metallic or virtually so, at most with an almost imperceptible bluish tinge.

MATERIAL EXAMINED

5 ♂, 8 ♀. **France**: 3 ♀, Vaucluse, nr St Pierre de Vassols, 17.vi.1985, 1 ♂, 18.vi.1985, 1 ♀, 22.vi.1985, all reared from cecidomyiid leaf-galls on wild *Prunus* (*Graham*) (BMNH). **Italy**: 1 ♀ (holotype), Bologna. **U.S.S.R.**: 4 ♂, 2 ♀, Moldavian SSR, Kishinev, reared 13–14.vi.1961 from same host as holotype (*V. Talitzki*) (BMNH), 1 ♀, Vadu-lui-Vody, 18.viii.1963 (*Bouček & Talitzki*) (BMNH).

HOST. *Putoniella pruni* (Kaltenbach) (= *marsupialis* F. Löw).

Aprostocetus (Aprostocetus) deobensis sp. n.

(Fig. 269)

♀. Differs from ♀ of *grandii* in the characters given in the key to females, couplet 58. Antenna (Fig. 269).

Body black, with very restricted to moderately extensive testaceous markings; head and thorax with hardly perceptible bluish tinge, gaster bronze-tinged. Antenna fuscous to black, scape sometimes paler on ventral edge. Dorsellum yellow. The following parts testaceous: mouth-edge more or less broadly, upper angle of mesopleuron, prepectus ventrally or wholly, often a mark in each front angle of mid lobe of mesoscutum, usually basal part of last tergite of gaster. One ♀ also has sides of mid lobe of mesoscutum, hind part of axillae, sides of scutellum, a spot on each side of propodeum, sides of pronotum, and meso- and metapleura partly, testaceous. Legs testaceous with hind coxae usually black over proximal third to half, mid coxae usually dark at base, fore coxae rarely dark at base; hind femora usually weakly to distinctly infuscate medially; fore tarsi brown, fourth segment of mid and hind tarsi brown. Tegulae yellow with hind edge usually slightly infuscate. Wings hyaline, venation yellowish to light testaceous. Length 1·6–2·3 mm.

♂. Unknown.

MATERIAL EXAMINED

6 ♀. Holotype ♀, **France**: Vaucluse, River Toulourenc, near Veaux, reared 27.viii.1983 from gall of *Pontania viminalis* L. on *Salix purpurea* (*Graham*) (BMNH).

Paratypes. **France**: 3 ♀, Alpes de Haute Provence, near St Vincent de Jabron, 4.viii.1984 (*Graham*) (BMNH); Vaucluse, 1 ♀, same locality and host-gall as holotype, 16.viii.1983, 1 ♀, 22.viii.1983 (*Graham*) (MVG).

HOST. Uncertain, but seems most likely to be one of the primary parasites of *Pontania viminalis*.

The *epicharmus*-group

Antenna of ♂ with ventral plaque of scape placed in upper half of scape. Antenna of ♀: row of setae (not counting subapical seta) on front edge of scape usually extending above the middle (not in some *westwoodii* and *fonscolombei*). Other characters as in the *caudatus*-group.

Aprostocetus (Aprostocetus) westwoodii (Fonscolombe) **comb. n.**

(Figs 307, 492, 580, 705)

Cinips? variegata Fonscolombe, 1840: 188. Holotype or syntype ♂, FRANCE: Bouches du Rhône, Aix district (*Fonscolombe*) (destroyed). NEOTYPE ♂, FRANCE: Vaucluse, near Bédoin, 9.viii.1981 (*Graham*) (BMNH). **Syn. n.**

Cinips? Westwodii [sic] Fonscolombe, 1840: 188. Holotype or syntype ♀, FRANCE: Bouches du Rhône, Aix district (*Fonscolombe*) (destroyed). NEOTYPE ♀, FRANCE: Vaucluse, near Bédoin, 14.vii.1980 (*Graham*) (BMNH).

[*Geniocerus fabicola* (Rondani); Erdös, 1954: 355. Misidentification.]

Fonscolombe described both *variegata* and *westwoodii* from material which he had reared 'E gemmis inflatis *verbasci nigri*'. He suggested that *westwoodii* might be the ♀ of *variegata* ['Nonne foemina praecedentis ?']. There are no specimens of either in Oxford, Paris or Geneva, where parts of the Fonscolombe collection still survive. Neotypes are therefore designated for the two nominal species, which I hope to have identified correctly. The species here treated as *westwoodii* fits the original descriptions of both *variegata* and *westwoodii* better than any other and has been reared from *Asphondylia melanopus* Kieffer in swollen flower-heads of *Lotus*. Fonscolombe's material was reared from swollen heads of *Verbascum nigrum* and the original host may have been *Asphondylia verbasci* Vallot. I found females of *westwoodii* on the estate formerly owned by Boyer de Fonscolombe but could not locate any galled *Verbascum* there. As the females taken at Fonscolombe are rather small, I have selected as neotype of *westwoodii* a ♀ which approaches in length the 3mm given in the original description, from a locality not too distant from Aix and where I have also taken the ♂.

I have emended Fonscolombe's original spelling (*westwodii*) which is clearly a typographical error because in the third paragraph of his description he mentioned Westwood, who had sent him another species which he had compared with his *westwoodii*.

♀. Head barely as broad as mesoscutum, 2·4–2·5 times as broad as long; POL 1·20–1·35 OOL, OOL 1·75–1·80 OD. Eyes about 1·2 times as long as broad. Malar space 0·66 length of eye, sulcus slightly curved. Mouth nearly 1·2 malar space. Antenna (Fig. 307) with scape 0·85–0·90 length of eye, reaching lower edge of median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus about twice as long as broad, slightly shorter than F1; anelli (Fig. 705); funicle proximally distinctly stouter than pedicellus, hardly thickening distad, its segments decreasing slightly in length, F1 1·8–2·1 times, F2 1·3–1·6 times, F3 1·0–1·3 times as long as broad; clava slightly broader than F3, 2·0–2·2 times as long as broad, bluntly pointed, spine 0·15–0·20 length of F3, with apical seta fully as long as spine; sensilla rather sparse on funicle, numerous on clava, usually in one irregular row on each segment, sometimes in 2 rows, not very long, decumbent. Thorax 1·3–1·4 times as long as broad; propodeal slope 50°–60°. Pronotum short. Mid lobe of mesoscutum about as broad as long, somewhat dull, with excessively fine superficial reticulation having most areoles twice or less than twice as long as broad; median line absent; 3–6 adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, moderately convex, rather dull, reticulation much finer than that of mesoscutum, its areoles longer; submedian lines slightly nearer to sublateral lines than to each other, diverging slightly caudad, enclosing a space 2·0–2·3 times as long as broad; setae subequal, their length nearly as great as distance between submedian lines, anterior pair approximately in middle. Dorsellum about 3 times as broad as long. Propodeum broadly and deeply emarginate, medially shorter than dorsellum, shiny, weakly sculptured; median carina extremely short; callus with 3–6 setae. Legs moderately long, somewhat slender; hind femora 3·5 times as long as broad; spur of mid tibia 0·65–0·70 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing slightly more than twice as long as broad; costal cell about as long as *M*, 8·5–9·0 times as long as broad, with row of setae on its lower surface sometimes broken medially; *SM* with 4–7 dorsal setae; *M* somewhat thick, 3·0–3·6 times length of *ST*, its front edge with 9–14 setae; *ST* at 45°–50°, somewhat thick, broadening gradually into the moderate-sized stigma; *PM* rudimentary; speculum moderate-sized, wing beyond it moderately thickly pilose; cilia very short. Hindwing obtuse; cilia 0·15–0·20 breadth of wing. Gaster lanceolate, much longer than head plus thorax, about as broad as thorax, 2–3 times as long as broad, acuminate; last tergite as long as or somewhat longer than broad; ovipositor sheaths projecting by about one-third length of last tergite; longest seta of each cercus only slightly longer than the others; tip of hypopygium slightly before half length of gaster.

Black with yellow markings, non-metallic. Usually the following parts are yellow: head except a stripe down middle of frons and face and sometimes the ocellar triangle; sides and sometimes hind edge of pronotum more or less; prepectus and upper angle of mesopleuron; sides and posterior half of mid lobe of mesoscutum; scapulae except in front; scutellum except a median spot, axilla except an anterior spot; dorsellum; sometimes sides of propodeum more or less; variable transverse bands on all the gastral tergites except the last, these bands extending on to sides of gaster. Paler forms have the yellow markings more extensive. Darker forms also occur; one ♀ has head black with orbits pale, mesoscutum black except along notauli, scutellum with black median stripe, gaster hardly pale-marked. Antennae blackish; tip of pedicellus sometimes paler. Legs yellow with fore coxae often more or less black proximally, mid and hind coxae usually mainly or wholly black; femora narrowly to broadly black proximally; mid and hind tibiae sometimes slightly infuscate medially; tarsi darkening towards their tips. Tegulae yellow, sometimes darker posteriorly. Wings usually slightly grey-tinged, venation testaceous to brownish. Length 1·6–3·0 mm.

♂. Antenna (Fig. 492) with scape slightly shorter than eye, just reaching median ocellus, about 3 times as long as broad, with ventral plaque about 0·27 length of scape; pedicellus plus flagellum 1·60–1·75 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, hardly longer than F1; flagellum proximally somewhat stouter than pedicellus but tapering very slightly distad; F1 hardly longer than broad, following segments each nearly or about twice as long as broad; clava somewhat longer than F3 plus F4, nearly 6 times as long as broad, with C1 and C2 each about twice as long as broad, C3 slightly shorter; whorled setae long, those of F1 reaching tip of F3. Genitalia (Fig. 580): digitus with a short, strongly oblique tooth on hind edge and a second minute tooth mesad of the first.

Colour much as in ♀ but gaster black, or with traces of a yellowish subbasal transverse band, occasionally with a few pale bands.

MATERIAL EXAMINED

8 ♂, 44 ♀. **Czechoslovakia**, **France**, **Hungary**, **Italy**, **Spain**.

HOSTS. *Asphondylia melanopus* Kieffer, reared in Czechoslovakia by M. Skuhravá. The species probably has other hosts, for example *Asphondylia verbasci* Vallot see above in discussion of types).

Aprostocetus (Aprostocetus) cycladum sp. n.

(Figs 272–274)

♀. Head hardly as broad as mesoscutum, about 2·6 times as broad as long; POL about 2·5 OOL, OOL 1·5 OD. Eyes 1·4 times as long as broad, separated by hardly 1·2 times their length. Malar space 0·6 length of eye, sulcus very slightly curved, with a very small fovea. Mouth somewhat greater than malar space. Setae of head strong and dark, length of those on vertex nearly equal to OD. Antenna (Fig. 274) with scape distinctly shorter than eye but reaching lower edge of median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, slightly shorter than F1; funicle rather slender, proximally a little stouter than pedicellus, thickening slightly distad, its segments decreasing a little in length, F1 2·1–2·7 times, F2 1·9–2·0 times, F3 1·65–1·90 times as long as broad; clava somewhat broader than F3, slightly shorter than or almost as long as F2 plus F3, 2·15–2·20 times as long as broad, obtuse, with C1 about as long as broad, C2 and C3 progressively shorter, spine 0·25 length of C3, with apical seta about as long as spine; sensilla moderately numerous, in 2 irregular rows on all segments except C2 and C3 which have 1 row, slender, rather short, decumbent with short projecting tips. Thorax about 1·2 times as long as broad; propodeal slope about 70°. Pronotum short, its hind edge obtuse-angularly excised. Mid lobe of mesoscutum slightly broader than long, moderately convex, rather dull, with extremely fine, very slightly raised reticulation somewhat like that of *fabicola* (Fig. 277), having most areoles 2–3 times as long as broad; median line subobsolete though traceable in some lights; 4–5 dark adnotaular setae on each side, hindmost nearly as long as scutellars. Scutellum about 1·3 times as broad as long, strongly convex, reticulation finer than that of mesoscutum with most areoles 3–4 times as long as broad; submedian lines slightly nearer to sublateral lines than to each other, subparallel and straight, enclosing a space about twice as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair slightly behind middle. Dorsellum lunate, about 4·5 times as broad as long. Propodeum strongly transverse, broadly and deeply emarginate, medially slightly shorter than dorsellum, shiny, with very fine obsolescent reticulation; median carina slightly raised, not foveate basally, expanding posteriorly; spiracles oblique, oval, close to metanotum, separated from hind edge of propodeum by 1·5 times their length; callus with 3–5 dark setae. Legs of medium length; hind femora about 4 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere shorter than basitarsus; claws (Fig. 273) with a small basal tooth or lobe. Forewing (Fig. 272) about 2·15 times as long as broad; costal cell about as long as *M* and 9 times as long as broad, the row of setae on its lower surface widely broken medially; *SM* with 4–5 dorsal setae; *M* slightly thickened, 3·1–3·6 times length of *ST*, its front edge with 11–15 setae; *ST* at about 50°, straight, not thin at base, gradually expanding to form the moderate-sized rhomboidal stigma; *PM* a stub, up to 0·25 length of *ST*; speculum rather small, hardly extending below *M*, wing beyond it moderately thickly pilose, more thickly distad; cilia about 0·15 length of *ST*. Hindwing rounded; cilia 0·15 breadth of wing. Gaster long-ovate, about 1·2 times length of head plus thorax, nearly or about as broad as thorax, about twice as long as broad, acute and slightly acuminate; last tergite as broad as or somewhat broader than long; ovipositor sheaths projecting by 0·30–0·33 length of last tergite; longest seta of each cercus 1·3–1·5 length of next longest, curved; tip of hypopygium at about 0·5 length of gaster.

Black; head and thorax non-metallic, gaster bronze. Antennal scape yellowish with dorsal edge infuscate, pedicellus and flagellum fuscous. Legs black; knees and tips of tibiae brownish testaceous, fore tarsi fuscous, mid and hind tarsi testaceous proximally, gradually darkening to fuscous at tips. Wings slightly grey-tinged, venation brownish testaceous to brown. Length 1·70–1·82 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **Greece**: Kikládes, Santorini, Fira, 24.xi.–6.xii.1974, on *Thymelaea hirsuta* (*A. C. & W. N. Ellis*) (ITZ).

Paratype. **Greece**: 1 ♀, Lésvos, Alifandá, 3 km W. of Mitilini, 24.x.1973 (A. C. & W. N. Ellis) (ITZ).

HOST. Unknown.

COMMENTS. This species may be related to *westwoodii* from which it differs in having ratio POL : OOL greater, ratio OOL : OD less, antennal funicle more slender proximally and with relatively longer segments; thorax more squat; mid lobe of mesoscutum with median line indicated; gaster rather shorter; cercal setae slightly unequal; body wholly black, legs mainly black. If the male exists its characters would help to clarify the tentative placing of *cycladum*.

Aprostocetus (Aprostocetus) epicharmus (Walker) **comb. rev.**

(Figs 309, 314, 493, 583)

? *Cirrospilus Ione* Walker, 1839*a*: 301. Lectotype ♂, Great Britain: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Cirrospilus Vincius Walker, 1839*a*: 317. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 52) [examined]. **Syn. n.**

Cirrospilus Epicharmus Walker, 1839*c*: 180. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

? *Cirrospilus Rhode* Walker, 1839*e*: 29. Lectotype ♂, Great Britain: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Tetrastichus variegatus Szelényi, 1941: 406. Holotype ♀, Hungary: Budapest (*Szelényi*) (TM) (destroyed) [examined]. [Synonymized with *epicharmus* Walker by Domenichini, 1966*a*: 154.]

Geniocerus variegatus (Szelényi) Erdös, 1954: 354.

Aprostocetus epicharmus (Walker) Graham, 1961*b*: 52.

Tetrastichus epicharmus (Walker) Domenichini, 1966*a*: 154; 1966*b*: 29; Erdös, 1971: 227–228; Kostjukov, 1978*b*: 458.

The ♂ lectotype of *Cirrospilus ione* has its antennae slightly collapsed and distorted, hence it is difficult to decide whether it belongs to *epicharmus* or *agrus*. Probably it does represent a ♂ of *epicharmus*, however.

The ♀ lectotype of *Cirrospilus vincius* is evidently a dwarf specimen of *epicharmus*. The name *vincius* has strict priority but as its lectotype is atypical, it is safer to retain *epicharmus* as the valid name.

Cirrospilus rhode is represented by a ♂ lectotype which probably belongs to *epicharmus* but there is a residual doubt for the same reason as that expressed above for *C.ione*.

Many years ago I examined the holotype ♀ of *Tetrastichus variegatus* Szelényi, which was labelled 'Budapest 1935 iv/viii dr. Szelényi; Dasyneura papaveris paras.; 2449; Tetrastichus variegatus sp. n. det. Dr Szelényi'. The late Dr Szelényi informed me in 1973 that his type-material had been destroyed. Fortunately I had made extensive notes on the holotype and had compared a specimen which agreed with it.

♀. Head usually collapsed, but when undistorted slightly broader than mesoscutum, 2·3–2·4 times as broad as long; POL about 1·7 OOL, OOL 1·3–1·5 OD. Eyes 1·3 times as long as broad, separated by about 1·25 times their length. Malar space 0·6–0·7 length of eye, sulcus slightly curved. Mouth about 1·2 malar space. Antenna (Fig. 309) with scape distinctly shorter than eye, not reaching median ocellus, 3·3–3·5 times as long as broad; pedicellus plus flagellum equal to or slightly greater than breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, as long as or slightly longer than F1; funicle proximally slightly stouter than pedicellus, thickening at least very slightly distad, its segments subequal or decreasing a little in length, F1 varying from very slightly transverse to 1·8 times as long as broad, F2 1·0–1·7 times as long as broad, F3 quadrate to 1·4 times as long as broad; clava distinctly broader than F3, as long as or slightly longer than F2 plus F3, 1·8–2·1 times as long as broad, pointed, with C1 quadrate to slightly transverse and occupying nearly half the total length, C2 much shorter, C3 very short, spine tending to be hidden by sensilla, hardly half length of C3, with apical seta distinctly shorter than spine; sensilla rather sparse, uniseriate, moderately long, decumbent or nearly so. Thorax 1·4–1·5 times as long as broad; propodeal slope 50°–60°. Pronotum short. Mid lobe of mesoscutum 1·2–1·4 times as broad as long, moderately convex, normally rather dull, with very fine though rather strong reticulation (Fig. 275) which is very slightly raised, its areoles mostly about twice as long as broad or somewhat less; median line distinct and complete, usually rather strong; 3–5 rather short adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, moderately strongly convex, with excessively fine engraved reticulation having areoles more elongate than on mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae subequal, their length slightly less than distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum 2·6–3·2 times as broad as long. Propodeum broadly and deeply emarginate, medially 0·25–0·60 length of dorsellum, moderately shiny, with fine, superficial reticulation; median carina sometimes rather low, tending to be broad; spiracles moderate-sized, oval, nearly touching metanotum. Legs of medium length and thickness; hind femora 3·6–4·2 times as long as broad; spur of mid tibia about 0·75 length of basitarsus. Forewing 2·15–2·25 times as long as broad; costal cell slightly shorter than *M*, 11–14 times as long as broad, the row of setae on its lower surface sometimes narrowly to very widely broken medially; *SM* with 3–5 dorsal setae; *M* not thick, 3·3–4·1 times length of *ST*, its front edge with 8–14 setae; *ST* not thin, at about 50°, stigma small; *PM* a short stub which is sometimes 0·3 length of *ST*; speculum small, not or hardly extended below *M*;

wing beyond rather thickly pilose but with a very narrow bare strip below *M* and a bare area above *ST*; cilia 0·4–0·5 length of *ST*. Hindwing pointed or subobtuse; cilia 0·30–0·45 breadth of wing. Gastral petiole rather strongly transverse. Gaster (Fig. 314) lanceolate, including ovipositor sheaths 1·3–1·8 times as long as head plus thorax, 2·5–4·8 times as long as broad; last tergite usually longer than broad but variable, 1·0–1·4 times as long as broad; ovipositor sheaths projecting somewhat, sheaths plus postcercale 0·45–0·70 length of hind tibia; longest seta of each cercus about 1·6 times length of next longest, hardly kinked; tip of hypopygium at 0·5–0·6 length of gaster.

Colour extremely variable. The nominotypical from in Britain has the body black with rather weak bluish to olive-bluish tints; scapular flanges, upper angle of mesopleuron, dorsellum sometimes laterally or wholly, sometimes inner orbits narrowly, testaceous or yellowish; antennae black; coxae black, trochanters fuscous, trochantelli usually pale, femora black with tips narrowly to broadly yellow; fore tibiae yellowish or partly infuscate, mid and hind tibiae fuscous with knees and tips yellowish; fore tarsi fuscous, mid and hind tarsi yellowish darkening to fuscous at tips; tegulae black; wings hyaline, venation testaceous to fuscous.

More richly yellow-marked specimens (f. *variegatus*) occur with the nominotypical form (sometimes in the same brood) rather rarely in northern Europe but frequently in southern and central Europe. Yellow colour tends to spread roughly in the following sequence: a pair of spots in front angles of mesoscutum, also a pair on hind margin which then fuse and extend along the notauli; sides of scutellum; mouth-edge, orbits and face; scapulae and pronotum more or less; transverse bands on the gaster. In pale forms the whole head except the ocellar triangle and part of the occipital surface becomes yellow; the thoracic dorsum, except the propodeum and usually the front part of the mesoscutum, becomes yellow, also the prepectus, upper part of mesopleuron, and broad bands on the gaster. Likewise the coxae become more or less yellow, the tibiae wholly so, whilst in extreme cases only the hind femora have a dark spot. The antennal scape beneath, and the tegulae, become yellow, the flagellum becomes pale brown and the wing-venation yellow. Some specimens with mainly dark body have relatively pale legs. Length 1·1–2·0 mm.

♂. Antenna (Figs. 493) with scape 2·35–2·70 times as long as broad, ventral plaque 0·33–0·50 length of scape; pedicellus plus flagellum 1·7–1·8 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly to somewhat longer than F1; funicle proximally slightly stouter than pedicellus, cylindrical or tapering a little distad; F1 about half length of F2, quadrate, F2 to F4 subequal in length, each nearly or just twice as long as broad; clava slightly longer than F3 plus F4, 4·0–4·8 times as long as broad, with C1 and C2 subequal in length, each 1·7–1·9 times as long as broad, C3 about half as long as C2; whorled setae long, those of F1 reaching about to tip of F3. Genitalia (Fig. 583).

Range of colour variation much as in ♀.

MATERIAL EXAMINED

14 ♂, many ♀. **Corfu**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Greece**, **Hungary**, **Ireland**, **Italy**, **Sweden**, **Yugoslavia**.

HOSTS. *Dasineura papaveris* (Winnertz), *D. brassicae* (Winnertz), *Jaapiella medicaginis* (Rubsaamen), *Contarinia medicaginis* Kieffer (see Domenichini, 1966*b*: 29). Szelényi (1941: 407) found it to be an endoparasite of the larvae of *Dasineura papaveris*. *A. epicharmus* has also been reared, both by O. W. Richards and by me, from inflorescences of *Trifolium pratense*, but the host was not ascertained. I have reared a number of specimens from dry capitula of *Centaurea aspera* which I collected in France (Hérault, Pic St Loup, viii.1978). Further I have examined 2 ♂, 2 ♀, Yugoslavia: Crna Gora, Morača, 26.vii.1971, reared from a gall on *Linaria genistifolia* [labelled as *L. dalmatica*], (*M. Bogavac*) (BMNH).

In view of the wide distribution and variability of *epicharmus*, it could have other hosts in addition to those noted above.

COMMENT. This species appears to be locally abundant. Its distribution may well be considerably wider than the above records indicate.

Aprostocetus (Aprostocetus) agrus (Walker) **comb. rev.**

(Figs 310, 311, 315, 316, 584)

Cirrospilus Agrus Walker, 1839*a*: 306. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Cirrospilus Amynus Walker, 1839*a*: 313. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Geniocerus conii Erdös, 1954: 354. LECTOTYPE ♀, Hungary: Gárdony, 24.vii.1952 (*Erdös*) (TM), here designated [examined]. **Syn. n.**
Geniocerus rugosus Erdös, 1954: 356. LECTOTYPE ♀, Hungary: Bákony Mts, Porva, 7.vii.1953 (*Erdös*) (TM), here designated [examined]. **Syn. n.**
Aprostocetus agrus (Walker) Graham, 1961*b*: 52.
Aprostocetus amynus (Walker) Graham, 1961*b*: 52.
Tetrastichus agrus (Walker) Domenichini, 1966*a*: 153; 1966*b*: 17.
Tetrastichus conii (Erdös) Domenichini, 1966*a*: 173; 1966*b*: 26.
Tetrastichus rugosus (Erdös) Domenichini, 1966*a*: 156; 1966*b*: 48; Kostjukov, 1978*b*: 461.

Erdös originally had 7 ♂ and 22 ♀ syntypes of *Geniocerus conii*. I have examined the two ♀ syntypes from Hajós and Császártöltés, also most of those from Gárdony (some of these were missing from his collection). From a mount bearing 3 ♀ on two cards I have removed one ♀ which is here designated lectotype; it is labelled 'Gárdony 1952.vii.24 dr. Erdös; Conium maculatum L.; ♀; Cotypus (pink label); Geniocerus conii Erd. det. Erdös'. It has the body mainly yellow.

I have examined the two ♀ syntypes of *Geniocerus rugosus* Erdös from Porva. One of these has been labelled, and is here designated, lectotype. It bears labels as follows: 'Bakony 1953.vii.7. Dr Erdös; Porva erdéi füves; ♀; Cotypus (pink label); Geniocerus rugosus Erd. det. Erdös'. The lectotype has almost wholly dark body and closely resembles the lectotypes of *agrus* (Walker) and *amynus* (Walker).

♀. Appears to differ from ♀ of *epicharmus* only in the characters given in the key to females, couplet 99. The three forms represented by *epicharmus*, *conii* and *agrus* have possed a difficult problem. The relatively great range of variation in length of gaster seems to preclude the idea that they all belong to a single species. Two forms of ♂ with slightly different antennae occur and are believed to belong to *epicharmus* and *agrus* respectively. On the other hand males and females of *conii* seem to be richly yellow-marked extreme forms of *agrus*.

After much thought I have concluded tentatively that *epicharmus* is a distinct species, whilst *agrus* and *conii* represent extreme forms of a second species, the form *conii* having on average a more elongate gaster (Fig. 315) approaching nearer to *epicharmus* in this respect, whilst the form *agrus* has a relatively shorter gaster (Fig. 316). Antenna of f. *agrus* (Fig. 310), of f. *conii* (Fig. 311).

Colour shows much the same range of variation as in ♀ *epicharmus*. The nominotypical form of *agrus* has the body nearly wholly dark, much as in nominotypical *epicharmus*. British specimens, and some from southern Europe and Hungary, are of this dark form. Some from southern Europe have more extensive yellow markings but relatively short gaster; others have the body extensively or mainly yellow and the gaster relatively longer (f. *conii*). Length 1·0–1·6 mm.

♂. Differs from ♂ of *epicharmus* in having antennal scape nearly 3 times as long as broad, its ventral plaque 0·33 length of scape; pedicellus plus flagellum 1·60–1·65 times breadth of mesoscutum; segments of flagellum slightly shorter. Genitalia (Fig. 584).

MATERIAL EXAMINED

6 ♂, 51 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Greece**, **Hungary**, **Ireland**.

Host. Unknown. Most of the syntypes of the form *conii* Erdös were swept from *Conium maculatum* but may just have been attracted to the flowers. I have found *agrus* on flowers of *Daucus carota*.

Aprostocetus (Aprostocetus) fonscolombei sp. n.

(Fig. 308)

♀. Differs from ♀ of *epicharmus* in having ovipositor sheaths far exserted, their projecting part 2·3–3·0 times as long as postcercale; antenna (Fig. 308) with combined length of pedicellus and flagellum on average slightly greater relative to breadth of mesoscutum, F3 on average rather longer, clava 2·4–2·7 times as long as broad. Ovipositor sheaths plus postcercale 0·6–0·9 length of hind tibia.

Colour as in the darker or moderately pale-marked females of *epicharmus*; the pale colour often tends towards reddish testaceous. Length 1·9–2·4 mm.

♂. Unknown.

MATERIAL EXAMINED

7 ♀. Holotype ♀, **France**: Bouches du Rhône, near Rognes, 1.viii.1975 (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Bohemia, Praha-Hlubočepy, 16.v.1963 (*Bouček*) (BMNH). **France**: 1 ♀, Aveyron, Homs, near Alzon, 1.viii.1975 (*Graham*) (BMNH). **Spain**: 1 ♀, Burgos, Paramo de Masa (heather moor), 2.viii.1974 (*R. R. Askew*) (RRA). **Yugoslavia**: 1 ♀, Dalmatia, Baško Polje near Makarska, 12.viii.1979 (*Bouček*)(BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) productus sp. n.

(Fig. 317)

♀. Differs from ♀ of *epicharmus* in having ovipositor sheaths (Fig. 317) far exserted and much longer than the postcercale. In this respect it resembles *fonscolombei*, from which it differs in the characters noted in couplet 84 of the key to females. All setae of the thoracic dorsum are pale. The tip of the hypopygium is situated approximately half-way along the gaster (length of the latter not including the ovipositor sheaths).

Colour as in paler forms (f. *variegatus*) of *epicharmus*. Length including ovipositor sheaths 2·2–2·5 mm.

♂. Unknown.

MATERIAL EXAMINED

12 ♀. Holotype ♀, **France**: Hérault, St Félix l' Heras, 1.viii.1978 (*Graham*) (BMNH).

Paratypes. **France**: 4 ♀, Basses-Alpes, Banon, 23.vii.1974 (*Gijswijt*) (MJG); 1 ♀, Bouches du Rhône, Fonscolombe, 26.v.1982 (*Graham*) (BMNH); 1 ♀, Gard, Crespian, 3.vii.1977, 1 ♀, 6.vii.1977 on *Carduus vivariensis*, 1 ♀, 10.vii.1980 (*Gijswijt*) (MJG); 1 ♀, Vaucluse, Castellet, 27 or 28.vii.1974 (*Gijswijt*) (MJG), 1 ♀, Champeau, near Mérindol, 24.vii.1974, 1 ♀, Malaucène, 26.vii.1974 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) extensus sp. n.

♀. Differs from ♀ of *productus* only in the characters noted in couplet 85 of the key to females.

Colour as in moderately pale specimens of *epicharmus*, the yellow markings fairly extensive. Length including ovipositor sheaths 2·2–2·5 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **France**: Drôme, near Plaisians, 5.viii.1975 (*Graham*) (BMNH).

Paratype. **France**: 1 ♀, Drôme, Col de Macuègne, near Séderon, 7.viii.1975 (*Graham*) (BMNH).

HOST. Unknown.

The *caudatus*-group

Antenna as in *lycidas*-group but ventral plaque of ♂ scape most often placed mainly to wholly below the middle of the scape, occasionally in the middle; each segment of ♂ funicle with a compact subbasal whorl of long dark setae. Row of setae on front margin of ♀ scape (not counting the subapical seta) usually not extending above the middle (Figs 281, 285, 287, 292, 293, 296–298, 326–328, 334–336). Mesoscutum less shiny than in the *lycidas*-group, often relatively dull, with a silky lustre, with superficial or slightly raised reticulation which is stronger and tends to be rather less fine than in the *lycidas*-group; mid lobe with one row of adnotaular setae on each side. Digitus of ♂ genitalia in most species with 2 teeth on its hind margin, the second tooth tending to be smaller; very rarely (*zosimus*) with 3 teeth. Cercal setae and scutellar lines as in the *lycidas*-group. Propodeum of ♀ having its median length usually at least slightly less than that of the dorsellum, rarely equal to or slightly greater than that of dorsellum. Body as a rule slightly to strongly metallic; occasionally non-metallic, chiefly in forms with the body mainly to wholly yellow. Propodeal callus normally with 2 setae outside the spiracle (with 3 or more in rare aberrations of some species). Setae of ovipositor sheaths, seen in dorsal view, not forming a subapical tuft, or only a vague tuft. Other characters as in the *lycidas*-group.

I established and diagnosed this species-group in two papers (Graham, 1961*a*: 23–24; 1961*b*: 50). Domenichini, however, united the *caudatus*- and *lycidas*-groups (1966*a*: 149) and called the resulting entity the *strobilanae*-group. This course obscured the very real differences between the *caudatus*- and *lycidas*-groups to which I have drawn attention in their respective diagnoses.

The species whose biology is known all attack Diptera: Cecidomyiidae in galls on various plants.

Aprostocetus (Aprostocetus) lysippe (Walker) **comb. rev.**

(Figs 284, 285, 466, 485)

Cirrospilus Lysippe Walker, 1839*d*: 419. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 50) [examined].
Cirrospilus Achaemenes Walker, 1839*d*; 419. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 50) [examined]. [Synonymized by Graham, 1961*b*: 50.]
Aprostocetus lysippe (Walker) Graham, 1961*b*: 50.
Tetrastichus lysippe (Walker) Domenichini, 1966*a*: 181–182; 1966*b*: 39.

♀. Antenna (Fig. 285) with flagellum short, clavate, with conspicuous outstanding setae. Propodeum (Fig. 284) with spiracles very large. The latter feature will distinguish both sexes of *lysippe* from all other known European species of *Aprostocetus*. In other respects the ♀ of *lysippe* somewhat resembles that of *aristaeus*.

♂. Propodeal spiracles very large, as in ♀. Antenna (Fig. 466) with scape nearly as long as eye, reaching slightly above vertex; pedicellus plus flagellum 1·7–1·8 times breadth of mesoscutum; pedicellus 1·6–1·7 times as long as broad, slightly longer than F1; funicle slightly stouter than pedicellus, filiform; F1 much shorter than F2, quadrate; following segments subequal in length, each 2·0–2·2 times as long as broad; clava hardly broader than funicle, hardly longer than F3 plus F4, about 4 times as long as broad, with C1 and C2 each about 1·7 times as long as broad, C3 very short; whorled setae long, those of F1 reaching tip of F3. Genitalia (Fig. 585).

Material examined
4 ♂, many ♀. **Czechoslovakia**, **Germany**, **Great Britain**.

Host. *Dasineura crataegi* (Winnertz) on *Crataegus*. Reared in Great Britain: England, Middlesex, Southgate (the type-locality of *lysippe*), vi.1967 (*Graham*) (BMNH), Hounslow, iv.1971 (*Bouček*) (BMNH); Oxfordshire, near Henley, iv.1970 (*Bouček*) (BMNH). Also in Germany: 15 ♀ in Hartig coll., with a terminal spray of *Crataegus* galled by *Dasineura crataegi* (the specimens bear my serial number 191) (ZSBS).

Comments. Males appear to be rare in this species. In a series reared in England by Bouček there are 204 females but only 4 males.

Aprostocetus (Aprostocetus) eurystoma Graham **comb. rev.**

(Figs 289–292, 465)

Aprostocetus eurystoma Graham, 1961*a*: 24–26. Holotype ♀, Sweden: Skåne, Falsterbo, 27.vii.1959 (*E. M. Graham*) (ZI) [examined].
Tetrastichus eurystoma (Graham) Domenichini, 1966*a*: 156; 1966*b*: 31.

In my original description of *eurystoma* (Graham, 1961*a*) I omitted to mention the sex of the holotype; it is a female.

For a full description of both sexes see Graham (1961*a*). Head (Fig. 289). Antenna ♀ (Fig. 292). Forewing ♀ (Fig. 290). Gaster ♀ (Fig. 291). Antenna ♂ (Fig. 465).

Material examined
1 ♂, 5 ♀. **Sweden**: all same data as holotype.

Host. Unknown.

Comment. *A. eurystoma* may be distinguished from all other species of the *caudatus*-group (except *hians*) by its very broad mouth-opening.

Aprostocetus hians Graham

(Figs 286, 288)

Aprostocetus hians Graham, 1983: 30–31. Holotype ♀, MADEIRA: east of Poiso, near João do Prado, 26.vii.1982 (*Graham*) (BMNH) [examined].

♀. A full description was given in my earlier paper (Graham, 1983).

♂. Unknown.

MATERIAL EXAMINED
3 ♀. **Madeira**.

HOST. Unknown.

COMMENT. *A. hians* differs from all other European species of the *caudatus*-group, except *eurystoma*, in its very broad mouth-opening. For differences between these two species see key to females, couplet 68.

Aprostocetus (Aprostocetus) cultratus sp. n.

(Figs 281–283)

♀. Head about as broad as mesoscutum and 2·4 times as broad as long; temples 0·1 length of eyes; POL 1·8 OOL, OOL about 1·7 OD. Eyes about 1·4 times as long as broad. Malar space 0·6 length of eye. Mouth about 1·15 malar space. Antenna (Fig. 281) with scape about 0·8 length of eye, reaching lower edge of ocellus; pedicellus plus flagellum 1·25–1·30 times breadth of mesoscutum; pedicellus 2·00–2·15 times as long as broad, slightly shorter than F1; funicle proximally not stouter than pedicellus and hardly thickening distad; funicular segments decreasing very slightly in length, F1 2·6–2·7 times, F2 2·2–2·3 times, F3 1·75–1·90 times as long as broad; clava slightly broader than F3, about as long as F2 plus F3, 2·5–3·0 times as long as broad, tapering somewhat, with C1 not or hardly longer than broad, spine very short; sensilla sparse, uniseriate. Thorax about 1·35 times as long as broad; propodeal slope about 45°. Mid lobe of mesoscutum 1·15–1·20 times as broad as long, slightly shiny, with extremely fine superficial reticulation having areoles mostly 2–3 times as long as broad; median line fine but complete; 3–5 adnotaular setae on each side. Scutellum 1·45–1·65 times as broad as long, moderately strongly convex, more finely sculptured than mesoscutum; submedian lines not or only slightly nearer to sublateral lines than to each other, enclosed space 1·85–2·15 times as long as broad; setae equal, length about that separating submedian lines, anterior pair in middle. Dorsellum 3·2–3·5 times as broad as long. Propodeum broadly and deeply emarginate, medially about half as long as dorsellum; median carina hardly developed. Legs of medium length, rather slender; hind coxae oblique, fully twice as long as broad; hind femora 3·5–3·7 times as long as broad; spur of mid tibia 0·65 length of basitarsus, fourth segment of mid and hind tarsi slightly shorter than basitarsus. Forewing 2·25–2·35 times as long as broad; costal cell distinctly shorter than *M*, 10–14 times as long as broad, row of setae on lower surface tending to be broken medially; *SM* with 3 dorsal setae; *M* thin, 3·9–4·5 times length of *ST*, its front edge with 10–14 setae; *ST* at about 50°, rather thin at base but expanding gradually, stigma moderate-sized; speculum very small, not extending below *M*, closed below; wing beyond thickly, uniformly pilose; cilia 0·3–0·5 length of *ST*. Hindwing bluntly pointed; cilia 0·3–0·5 breadth of wing. Gaster (Figs 282, 283) lanceolate, about twice as long as thorax, narrower than thorax, strongly acute and acuminate, 4–5 times as long as broad; last tergite somewhat longer than broad, cerci placed near its base; longest seta of each cercus about 1·6 times length of next longest; ovipositor sheaths projecting by a length equal to 0·28–0·35 length of hind tibia; venter compressed, hypopygium usually prominent (Fig. 283), its tip placed at 0·60–0·65 length of gaster (measured from its base to tip of ovipositor sheaths).

Body black with bluish or greenish blue tints; upper angle of mesopleuron yellow, mouth-edge sometimes yellowish, dorsellum obscurely testaceous laterally. Antennae blackish, scape sometimes paler at apex beneath. All coxae and all femora mainly, black with bluish tinge; hind trochanters, or all trochanters, partly fuscous; tips of femora broadly yellowish; tibiae yellowish with fuscous postmedian ring, or fuscous with bases and tips pale; fore tarsi fuscous, mid and hind tarsi yellowish at base gradually darkening to fuscous at tips. Tegulae yellowish anteriorly, fuscous posteriorly. Wings slightly grey-tinged; venation brownish testaceous. Length 1·6–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

7 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 26.viii.1971 (*Graham*) (BMNH).

Paratypes. Same locality as holotype, 1 ♀, 28.viii.1969, 1 ♀, 25.viii.1970, 1 ♀, 26.viii.1971, 3 ♀, 17.vii.1972 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. The ♀ of *cultratus* may be distinguished from all others of the *caudatus*-group by its very long hypopygium, the position of the cerci near the base of the last tergite, and the rather slender flagellum.

Aprostocetus (Aprostocetus) fabicola (Rondani) **comb. n.**

(Figs 277, 329, 330)

Entedon fabicola Rondani, 1877: 175. Lectotype ♀, ITALY (Museo La Specola, Florence), designated by Bouček (1974: 248–249) [examined].

Entedon lasiopterinus Rondani, 1877: 175. Lectotype ♀, ITALY (Museo La Specola, Florence), designated by Bouček (1974: 254–255) [examined]. **Syn. n.**

Tetrastichus fabicola (Rondani) Bouček, 1974: 248–252, figs 1–3.

Bouček (1974) published a redescription of *fabicola*, based mainly on the author's MS description which was previously thought to apply to an undescribed species. Because of the discovery of new material, a new, slightly modified redescription is given here.

Bouček (1974: 255) suggested that *lasiopterinus* Rondani might prove to be just a colour form of *fabicola*. I have since found dark specimens of *fabicola* which agree with the lectotype of *lasiopterinus*, hence I now place the latter in synonymy.

♀. Head about as broad as mesoscutum, about 2·3 times as broad as long; POL 1·5–1·8 OOL, OOL probably about 1·8 OD. Eyes 1·25–1·30 times as long as broad, separated by slightly more than their length, virtually bare. Malar space about 0·7 length of eye, sulcus weakly curved. Mouth 1·1 malar space. Antenna (Fig. 329) with scape 0·9 length of eye, reaching middle of median ocellus; pedicellus plus flagellum 1·35–1·50 breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, slightly shorter than or as long as F1; funicle not or only very slightly stouter than pedicellus, filiform, F1 2·2–2·8 times, F2 2·0–2·5 times, F3 2·0–2·2 times as long as broad; clava slightly broader than funicle, about as long as F2 plus F3, 3·4–3·7 times as long as broad, pointed, with C1 1·5–1·8 times as long as broad, C2 somewhat shorter, C3 very short, spine about 0·5 length of C3, with apical seta about 0·6 length of spine; sensilla rather sparse, moderately long, usually forming an irregular single row (sometimes almost two partly overlapping rows) on segments of funicle and on C1, uniseriate on C2 and C3, decumbent with hardly projecting tips. Thorax 1·45–1·55 times as long as broad; propodeal slope about 50°. Pronotum short, crescentic. Mid lobe of mesoscutum (Fig. 277) about as broad as long, rather dull, with extremely fine but very slightly raised reticulation, with areoles (at least in posterior half of sclerite) mostly about twice as long as broad; median line often fine though distinct at least posteriorly, sometimes strong; 3–4 adnotaular setae on each side. Scutellum 1·25–1·40 times as broad as long, moderately convex, reticulation superficial, much finer than that of mesoscutum; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space 1·7–2·0 times as long as broad; setae subequal, their length about 0·6 distance between submedian lines, anterior pair in or even very slightly before the middle. Dorsellum 2·5–2·7 times as broad as long, hind edge curved. Propodeum broadly and deeply emarginate, medially 0·6–0·7 length of dorsellum, shiny, with extremely fine, superficial reticulation; median carina extremely short; spiracles moderate-sized, oval, touching metanotum. Legs moderately long and somewhat slender; hind coxae oblique, somewhat more than twice as long as broad; hind femora about 4 times as long as broad; spur of mid tibia 0·75–0·85 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·25–2·40 times as long as broad; costal cell shorter than *M*, 14–16 times as long as broad, the row of setae on its lower surface sometimes broken medially; *SM* with 3–4 dorsal setae; *M* relatively thin, 3·6–4·2 times length of *ST*, its front edge with 12–18 setae; *ST* at 40°–45°, nearly straight, stigma merely a slight thickening of the vein; *PM* a short stub or rudimentary; speculum small, not extending below *M*; wing beyond it moderately thickly pilose; cilia 0·3–0·4 length of *ST*. Hindwing obtuse or almost rounded; cilia 0·25–0·33 breadth of wing. Gaster (Fig. 330) lanceolate, 1·5–1·6 times as long as head plus thorax, at most a little narrower than thorax, including ovipositor sheaths 2·7–3·4 times as long as broad, strongly acute and slightly acuminate; last tergite as long as or slightly longer than broad; ovipositor sheaths plus postcercale 0·48–0·57 length of hind tibia, length of postcercale about equal to projecting portion of sheaths; longest seta of each cercus about twice length of next longest, curved and slightly sinuate; tip of hypopygium slightly before half length of gaster.

Body black, usually with more or less extensive yellow markings; the black areas with weak bluish metallic tint. Yellow parts are: usually face except a spot below toruli, inner orbits broadly, outer orbits narrowly, genae partly; sides of pronotum; a stripe on each side of mid lobe of mesoscutum inside each notaulus, hind edge of mid lobe, lateral and hind margins of scapulae; scutellum between sublateral lines, except for a quadrate spot covering the anterior half of the space between submedian lines; dorsellum laterally or wholly; prepectus, upper angle of mesopleuron; a spot on each side of base of gaster and a lateral spot on each side of 2 or 3 of the middle tergites. Sometimes the yellow markings are progressively reduced and in very dark forms (f. *lasiopterinus*) only mouth-edge, upper angle of mesopleuron, and the dorsellum, are pale. Antennal scape and pedicellus black, usually indefinitely paler at tips; flagellum brown. Coxae black, in pale forms fore coxae partly to wholly yelow, mid coxae sometimes yellow apically; femora more or less infuscate to black proximally (usually one-third to half of fore and mid femora, half to two-thirds of hind femora); fore tibia often with dark stripe; legs otherwise yellow with fore tarsi fuscous, mid and hind tarsi with third segment brownish, fourth fuscous. Tegulae yellow in pale forms, more or less infuscate posteriorly in dark forms. Wings hyaline or faintly yellowish, venation yellowish to brownish testaceous. Length 1·8–2·5 mm.

♂. Unknown.

MATERIAL EXAMINED
20 ♀. **France**, **Great Britain**, **Italy**.

HOST. Rondani (1977) cited as host *Lasioptera fabae* Rondani but the identity of this species is uncertain. In Britain I have swept a number of specimens from grassy vegetation where much *Vicia* was present. Clearly there is an association with hosts on Papilionaceae.

Aprostocetus (Aprostocetus) lachares (Walker) **comb. n.**

(Figs 331–333)

Cirrospilus Lachares Walker, 1839*a*: 309. LECTOTYPE ♀, GREAT BRITAIN: Windsor Forest (BMNH), here designated [examined].
Tetrastichus lachares (Walker) Graham, 1961*b*: 62.

I stated earlier (Graham, 1961*b*: 62) that the single ♀ standing as *lachares* in BMNH has the body yellow-marked, whereas the description stated that it was black. Hence I did not designate this specimen as lectotype. Later I captured 3 ♀ of the same species in the type-locality, Windsor Forest; these have darker bodies than the Walker specimen. The species is evidently rather rare or very local, and its rediscovery in Windsor Forest convinces me that it really is *lachares* and that Walker's description was faulty. Hence I here designate the Walker ♀ in BMNH as lectotype.

♀. Head slightly broader than mesoscutum, about 2·3 times as broad as long; POL about 1·5 OOL; OOL nearly twice OD. Eyes 1·3 times as long as broad, separated by 1·25 times their length. Malar space about 0·66 length of eye, sulcus slightly curved. Mouth 1·15 malar space. Setae of vertex dark, their length less than OD. Antenna (Fig. 331) with scape 0·85 length of eye, about 4 times as long as broad, almost reaching median ocellus; pedicellus plus flagellum about 1·3 times breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, somewhat shorter than F1; funicle proximally distinctly stouter than pedicellus, not or hardly thickening distad; its segments subequal or decreasing slightly in length, F1 2·0–2·1 times, F2 1·8–2·0 times, F3 1·5–1·7 times as long as broad; clava slightly broader than F3, nearly as long as F2 plus F3, 2·7–3·1 times as long as broad, bluntly pointed, with C1 not or hardly longer than broad, C2 and C3 progressively shorter, spine nearly 0·5 length of C3, with apical seta about half length of spine; sensilla in 2 overlapping rows on segments of funicle and on C1, uniseriate on C2 and C3, moderately long, decumbent. Thorax 1·5–1·6 times as long as broad; propodeal slope 45°–50°. Pronotum short, crescentic, its hind edge slightly angularly emarginate. Mid lobe of mesoscutum very slightly longer than broad, moderately convex, relatively dull, with extremely fine, superficial or very slightly raised reticulation having most areoles 2–3 times as long as broad (in posterior part of sclerite tending to be less than twice as long as broad); median line extremely fine but traceable in some lights; 5–6 dark adnotaular setae on each side. Scutellum only slightly broader than long, moderately strongly convex, rather more finely sculptured than mesoscutum; submedian lines equidistant from each other and from sublateral lines, or hardly nearer the latter, enclosing a space 2·2–2·5 times as long as broad; setae equal, slightly shorter than distance between submedian lines, dark, anterior pair in or slightly behind middle. Dorsellum 2·5–3·0 times as broad as long, hind edge strongly curved or almost obtusely angulate. Propodeum broadly and deeply emarginate, medially 0·50–0·75 length of dorsellum, relatively shiny, with very fine and delicate reticulation; median carina very short and rather broad; spiracles moderate-sized, oval, close to metanotum. Legs rather long, rather slender; hind coxae about twice as long as broad, shiny, with fine, delicately engraved reticulation, hind edge strongly curved; hind femora about 4·5 times as long as broad; spur of mid tibia 0·55–0·65 length of basitarsus, fourth tarsomere of mid leg slightly more than half as long as basitarsus. Forewing (Fig. 332) about 2·2 times as long as broad; costal cell somewhat shorter than *M*, 11–16 times as long as broad, the row of setae on its lower surface narrowly to widely broken medially; *SM* with 4–5 dorsal setae; *M* rather thick proximally but tapering distad, 4·0–4·5 times length of *ST*, its front edge with 13–16 setae; *ST* at 45°–50°, rather thick even proximally, expanding a little distally to form a poorly defined stigma; *PM* rudimentary; speculum small, not extending below *M*; wing beyond it densely pilose, even more densely towards apex; cilia 0·15–0·20 length of *ST*. Hindwing subobtuse; cilia about 0·25 breadth of wing. Gaster (Fig. 333) lanceolate, 1·8–1·9 times as long as thorax, nearly as broad as thorax, 3·00–3·75 times as long as broad, acuminate; last tergite 1·4–1·6 times as long as broad; ovipositor sheaths plus postcercale 0·43–0·46 length of hind tibia, sheaths 0·70–0·82 length of postcercale; longest seta of each cercus 1·6–1·7 times length of next longest, hardly kinked; tip of hypopygium slightly before half length of gaster.

Body black, head and thorax with rather weak bluish or greenish blue metallic tints; gaster bronze-tinged, bases of some of the middle tergites purplish; dorsellum with a testaceous spot on each side, the spots sometimes fused; mouth-edge more or less broadly testaceous to yellow; usually a pale spot enclosing each antennal torulus; inner orbits sometimes testaceous; upper angle of mesopleuron yellow. In pale forms the yellow or yellowish colour spreads over part or whole of the face, frons, sides of vertex, genae, sides of pronotum, prepectus, lateral edges of scapulae, hind part of mid lobe of mesoscutum, a spot on each side of base of gaster, sides of gaster ventrally. Antennae black. Coxae black, or fore coxae partly to mainly yellow; trochanters mainly yellow; legs otherwise yellow with proximal half to two-thirds of femora black, fore tibiae sometimes more or less infuscate, fore tarsi fuscous, mid and hind tarsi yellowish with third and fourth segments fuscous, second sometimes brown. Tegulae yellow, their hind edge sometimes dark. Wings subhyaline or faintly yellowish, venation yellowish to testaceous. Length 1·9–2·5 mm.

♂. Unknown.

MATERIAL EXAMINED

8 ♀. **France**: 2 ♀, Vaucluse, near Bédoin, 12.vii.1980 (*Graham*) (BMNH). **Great Britain**: 1 ♀ (lectotype), England, Berkshire, Windsor Forest (*Walker*) (BMNH), 1 ♀, 21.vi.1974, 1 ♀, 18.vi.1975, 1 ♀, 8.vi.1976 (*Graham*) (BMNH). **Greece**: 1 ♀, Crete, Anogia, 25.iv.1978, 1 ♀, 3.vi.1978 (*M. J. Gijswijt*) (MJG).

HOST. Unknown.

Aprostocetus (Aprostocetus) specularis sp. n.

♀. Differs from ♀ of *lachares* in having anterior pair of scutellar setae distinctly behind middle and about twice as far from front edge of scutellum as from the posterior setae, submedian lines somewhat nearer to sublateral lines than to each other, enclosing a space 1·90–2·05 times as long as broad; spur of mid tibia 0·51–0·53 length of basitarsus; gaster relatively shorter, 1·6–1·7 times as long as thorax and 2·35–2·60 times as long as broad, with ovipositor sheaths plus postcercale only 0·31–0·37 length of hind tibia.

Body black with bluish to greenish-blue metallic tints; mouth-edge, upper angle of mesopleuron, and dorsellum yellow. Legs, tegulae and wings coloured as in *lachares*. Length 1·9–2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **France**: Gard, west of Alzon, 9.viii.1975 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, same data as holotype; 1 ♀, Vaucluse, near Bédoin, 9.vii.1980 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) vassolensis sp. n.

♀. Differs from ♀ of *lachares* as follows. Antenna with clava slightly shorter, 2·45–2·65 times as long as broad, its spine relatively a little longer. Scutellum with submedian lines somewhat nearer to sublateral lines than to each other, enclosing a space 1·8–2·0 times as long as broad. Dorsellum with hind edge evenly curved. Spur of mid tibia 0·68–0·70 length of basitarsus. Forewing about 2·4 times as long as broad and reaching only to about level of cerci; surface beyond speculum only moderately thickly pilose. Gaster on average slightly longer, fully twice as long as thorax, 3·6–4·4 times as long as broad; ovipositor sheaths plus postcercale 0·53–0·60 length of hind tibia.

Body more extensively pale, the following areas yellow: head except ocellar triangle and occipital surface medially or mainly, and sometimes middle of frons and upper part of temples; pronotum except usually the middle third; at least sides and posterior part of mid lobe of mesoscutum, sometimes its whole surface except an anterior area; scapulae except an anterior spot; scutellum partly or mainly; sometimes the greater part of the mesopleuron. Fore coxae yellow except sometimes basally, mid and hind coxae sometimes partly to mainly yellow.

♂. Antenna with scape equal in length to eye, reaching slightly above vertex; pedicellus plus flagellum 1·9–2·0 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, about as long as F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 slightly longer than broad, following segments decreasing very slightly in length, each a little more than twice as long as broad; clava a little shorter than F3 plus F4, 5·0–5·5 times as long as broad.

Colour as in ♀ but yellow markings rather more extensive, with in addition the following parts yellow: scutellum between sublateral lines, a spot on each side of base of gaster, ventral surface of gaster more or less, coxae except bases of mid and hind pairs.

MATERIAL EXAMINED

2 ♂, 4 ♀. Holotype ♀, **France**: Vaucluse, near Bédoin, 9.vii. 1983 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, Aveyron, 3 km E. of Cantobre, 6.viii.1978; 1 ♀, Var, Bois de Pourrières, 21.vii.1979; 1 ♂, Vaucluse, near Gordes, 26.vii.1975, 1 ♀, St Pierre de Vassols, 11.viii.1976, 1 ♂, near Bédoin, 20.vii.1981 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) gnomus sp. n.

(Figs 312, 313)

♀. Head (when not collapsed) slightly broader than mesoscutum, somewhat more than twice as broad as long; POL probably somewhat less than twice OOL, lateral ocelli small. Eyes about 1·2 times as long as broad. Malar space slightly more than half length of eye, sulcus nearly straight. Mouth about 1·2 malar space. Antenna (Fig. 313) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum 1·1–1·2 times breadth of mesoscutum; pedicellus slightly longer than F1, 1·7–2·0 times as long as broad; funcile proximally not quite as stout as pedicellus, thickening very slightly distad; F1 often a little shorter than F2 but sometimes as long, 1·6–2·0 times as long as broad, F2 of same proportions, F3 as long as or a little longer than F2 but only 1·4–1·6 times as long as broad; clava distinctly broader than F3, at least slightly longer than funicular segments 2 plus 3 and sometimes nearly as long as the whole funicle, 2·3–2·7 times as long as broad, pointed, with C1 slightly longer than broad and occupying half the total length, C2 and C3 much shorter, spine rather short with apical seta nearly as long as the spine; sensilla sparse, uniseriate, moderately long, slender, subdecumbent with tips projecting slightly. Thorax about 1·2 times as long as broad; propodeal slope about 60°. Mid lobe of mesoscutum slightly broader than long, not very shiny, with very fine though fairly strong, superficial or hardly raised reticulation with areoles mostly 2·0–2·5 times as long as broad; median line absent; 2–3 adnotaular setae on each side. Scutellum about 1·3 times as broad as long, moderately strongly convex, with extremely fine engraved reticulation with areoles longer than those of mesoscutum; lines rather fine, submedians a little nearer to sublaterals than to each other, enclosed space nearly or about twice as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair in or very slightly behind the middle. Dorsellum 2·6 times as broad as long. Propodeum hardly shorter than dorsellum; median carina fine though distinct, hardly expanded posteriorly. Legs rather short; femora rather stout, hind pair about 3·5 times as long as broad; spur of mid tibia 0·85 length of basitarsus; fourth segment of mid and hind tarsi as long as basitarsus. Forewing about 2·25 times as long as broad; costal cell 10 times as long as broad; *SM* with 2–3 dorsal setae;

M not thick, 3·5–4·0 times length of *ST*, its front edge with 6–9 rather long setae; *ST* at about 50°, not thin, expanding at about half its length to form a moderate-sized, slightly oblong stigma; *PM* rudimentary; speculum small, closed below, not extending below *M*; wing beyond it moderately thickly and relatively uniformly pilose; cilia 0·4–0·6 length of *ST*. Hindwing (Fig. 312) moderately to strongly acute; cilia 0·75–1·00 breadth of wing. Gaster ovate, slightly longer than head plus thorax, 1·7–2·0 times as long as broad, acute; last tergite slightly broader than long; longest seta of each cercus nearly 1·5 times length of next longest, slightly kinked; ovipositor sheaths projecting slightly; tip of hypopygium at about 0·5 length of gaster.

Body black with moderately extensive yellow markings; the black parts with a distinct though not very strong bluish tint. The following parts are yellow: face, genae more or less, orbits, vertex except ocellar triangle; prepectus, upper angle of mesopleuron, dorsellum laterally or wholly, sides of pronotum against the hind margin, mid lobe of mesoscutum at least posteriorly, often also along the notauli, sometimes wholly except an anterior spot; scapulae except an anterior spot of varying size; basal half of gaster dorsally with two or more pairs of yellow lateral spots which often extend to form transverse bands, in pale specimens covering most of basal half of gaster. Antennae light to dark brown, scape sometimes paler beneath, pedicellus often paler beneath and at apex. Coxae black, fore coxae partly or wholly yellow, mid coxae sometimes partly to wholly yellow, hind coxae sometimes yellow distally; legs otherwise yellow with tarsi gradually darkening from near base to fuscous at tips and at least fore and hind femora slightly darkened at base, more often all the femora blackish over proximal half or more, the hind femora sometimes black except their tips. Tegulae yellow. Wings subhyaline, venation yellowish. Length 0·7–0·9 mm.

♀. Unknown.

MATERIAL EXAMINED

11 ♀. Holotype ♀, **Italy**: Aosta, Quart, 13.ix.1969 (*Bouček*) (BMNH).

Paratypes. **Italy**: 8 ♀, Aosta, Quart, 13.ix.1969; 2 ♀, Ceriale, near Albenga, 3.ix.1972 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) zosimus (Walker) **comb. n.**

(Figs 293, 294, 467, 586, 674, 711)

? *Cirrospilus Paralus* Walker, 1839*a*: 296. Syntype ♀, GREAT BRITAIN: near London (BMNH) [examined].

Cirrospilus Zosimus Walker, 1839*a*: 297. LECTOTYPE ♀, GREAT BRITAIN: near London (BMNH), here designated [examined].

Cirrospilus Simo Walker, 1839*a*: 298. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Hypsistus Walker, 1839*a*: 316. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Athyrte Walker, 1839*c*: 178. Lectotype ♀, GREAT BRITAIN: (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Bunus Walker, 1839*c*: 179. Syntypes, GREAT BRITAIN (BMNH), IRELAND (NMI). LECTOTYPE ♀, GREAT BRITAIN (BMNH) here designated [examined]. **Syn. n.**

Cirrospilus Abantidas Walker, 1839*c*: 179. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Molo Walker, 1839*c*: 179–180. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Chares Walker, 1839*c*: 180. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51). [examined]. **Syn. n.**

Cirrospilus Zopyrus Walker, 1839*e*: 29. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Cirrospilus Charoba Walker, 1839*e*:30–31. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Tetrastichus flavimanus Thomson, 1878: 289. Lectotype ♀, SWEDEN: Holmeja (ZI), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Tetrastichus punctiscuta Thomson, 1878: 289. Lectotype ♀, SWEDEN: Lund (ZI), designated by Graham (1961*b*: 51) [examined]. **Syn. n.**

Tetrastichus carinatus Forbes, 1885: 48; Burks, 1943: 583; Peck, 1963: 126–127. Lectotype ♀, U.S.A.: Illinois, Anna (Illinois Nat. Hist. Soc.) designated by Burks (1943: 584) [not examined]. **Syn. n.**
Tetrastichus rileyi Lindeman, 1887: 183–185. Syntypes, U.S.S.R. (? ZIL) [not examined]. **Syn. n.**
Geniocerus charoba (Walker) Kurdjumov, 1913: 250.
Geniocerus tenuis Erdös, 1954: 359. LECTOTYPE ♀, HUNGARY: Tompa, 14.vi.1952 (*Erdös*) (TM), here designated [examined]. **Syn. n.**
Aprostocetus charoba (Walker) Graham, 1961*b*: 51.
Tetrastichus charoba (Walker) Domenichini, 1966*a*: 156; 1966*b*: 24; Burks, 1979: 992.

Earlier (Graham, 1961*b*: 51) I adopted the name *charoba* for the present species as it has been used several times. I now restore the earliest name which is *zosimus* (Walker).

In my paper of 1961*b* I accidentally omitted to mention the type-material of *Cirrospilus zosimus* Walker. There are 3 syntypes, 2 ♂ and 1 ♀, in BMNH. The ♀, which is here designated lectotype, bears only a Waterhouse label 'Tetrastichus Zosimus Walker . . .'.

The syntypes of *Cirrospilus bunus* Walker comprise 1 ♂, 4 ♀ in Walker coll. (BMNH) and 2 ♀ in Haliday coll. (NMI). A ♀ in BMNH has been labelled by me as lectotype.

I have examined the two ♀ syntypes of *Geniocerus tenuis* Erdös and have labelled as lectotype the ♀ mentioned above in the synonymy.

♀. Head very slightly broader than mesoscutum, 2·1–2·3 times as broad as long; temples 0·15–0·20 length of types; POL 1·20–1·35 OOL, OOL 1·8–2·5 OD. Eyes 1·30–1·35 times as long as broad, separated by about 1·3 times their length. Malar space 0·6 length of eye, sulcus slightly curved, without or with at most a minute fovea. Mouth about 1·2 malar space. Antenna (Fig. 293) with scape at most 0·85 length of eye, just reaching median ocellus; pedicellus plus flagellum 1·30–1·35 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, in large ♀ only 0·6 as long as F1, in dwarfs very slightly longer than F1; anelli (Fig. 711); funicle proximally about as stout as pedicellus, relatively slender, not or hardly thickening distad; funicular segments subequal in length or decreasing slightly distad, subcylindrical (or F3 oval), F1 1·8–3·8 times, F2 2·0–3·0 times, F3 1·8–2·2 times as long as broad; clava distinctly broader than F3, from somewhat shorter, to somewhat longer, than F2 plus F3, 2·6–3·6 times as long as broad, pointed, with C1 quadrate to 1·6 times as long as broad, spine 0·5–0·7 length of C3, with apical seta somewhat shorter than spine; sensilla rather sparse except on the clava, their length 0·5–0·7 that of the segments, some decumbent but others with slightly projecting blades; setae of flagellum curved, most only moderately long and somewhat outstanding, others (more numerous on distal segments of funicle and on clava) longer but standing out less. Thorax 1·5–1·7 times as long as broad; propodeal slope 45°–50°. Pronotum short, crescentic. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately shiny, reticulation extremely fine, lightly engraved, with most areoles 3–4 times as long as broad; median line usually distinct though fine, sometimes hardly traceable; 3–5 rather short adnotaular setae on each side. Scutellum 1·15–1·30 times as broad as long, moderately convex, sculptured like mesoscutum but between the submedian lines with areoles at most twice as long as broad, outside these lines much more finely reticulate; submedian lines about equidistant from each other and from sublateral lines, or slightly nearer the latter, enclosed space 1·9–2·1 times as long as broad; setae subequal, their length slightly less than distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum 2·3–2·5 times as broad as long. Propodeum (Fig. 294) 2·5–2·7 times as broad as its length at sides, moderately broadly and not deeply emarginate, from 0·65 to as long as dorsellum, moderately shiny, with fine or moderately fine hardly raised reticulation; median carina not broad, slightly raised, broadening posteriorly. Legs of medium length and thickness; hind coxae about 1·7 times as long as broad, their dorsal edge strongly curved; hind femora moderately stout; spur of mid tibia 0·66–0·95 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·2–2·5 times as long as broad; costal cell 14–20 times as long as broad; *SM* with 3–5 dorsal setae; *M* 1·4–1·5 times length of costal cell, relatively thin, 4–5 times length of *ST*, its front edge with 8–14 setae; *ST* at 40°–45°, thin proximally but expanding slightly distad, stigma small; *PM* rudimentary or a short stub; speculum small, not extending below *M*; wing beyond it rather densely and uniformly pilose; cilia hardly half length of *ST*. Hindwing in large ♀ bluntly pointed, in small ♀ acute; cilia 0·33–0·60 breadth of wing. Gaster ovate to sublanceolate, from hardly longer than, to about 1·5 times as long as head plus thorax, as broad as or somewhat broader than thorax, 1·5–2·7 times as long as broad, acute and usually slightly acuminate; last tergite from slightly shorter, to slightly longer, than broad; ovipositor sheaths projecting at least very slightly, sometimes to as much as length of hind basitarsus, ovipositor sheaths plus postcercale at most 0·3 length of hind tibia; longest seta of each cercus about twice length of next longest, kinked. Hypopygium (Fig. 674).

Body varying from bright green through olive-green or olive-green with bronze or coppery reflections, to wholly bronze-green or bronze. Occasionally bluish green or dull bluish forms occur, whilst in some northern forms the body is black with only weak metallic tints. Upper angle of mesopleuron testaceous, sometimes also mouth-edge narrowly to broadly, occasionally the scapular flanges and a spot on each side of dorsellum. Antennae varying from wholly testaceous, to forms with scape partly to wholly black, pedicellus more or less infuscate and flagellum brown to fuscous. Some females with pale antennae have relatively dark legs, and vice versa. Tegulae yellow to partly or wholly fuscous. Wings hyaline or with a weak grey or yellowish tinge, venation yellowish testaceous to fuscous. Legs in palest forms yellow, including fore coxae, sometimes also mid coxae partly. In progressively darker forms fore coxae become partly to wholly black; then the femora become brownish, at first proximally, then mainly so, these dark parts varying to black; at the same time the pale parts tend to become testaceous. In very dark forms the tarsi become distally or wholly brown and in a few exceptionally dark females from Scotland and Ireland the tibiae are slightly infuscate medially. Length 1·1–2·2 mm.

The shape of the body varies considerably and forms which I have termed leptosomatic and pachysomatic occur. Such forms also occur in certain *Tetramesa* species (Eurytomidae) (see Graham, 1974: 78).

♂. Antenna (Fig. 467) with scape 1·05–1·20 length of eye, reaching distinctly above vertex, with ventral plaque 0·65–0·75 length of scape; pedicellus plus flagellum 2·15–2·75 times breadth of mesoscutum; pedicellus 1·75–2·00 times as long as broad, as long as or slightly shorter than F1; funicle hardly stouter than pedicellus, filiform; F1 much shorter than F2, 1·5–2·0 times as long as broad, following segments equal in length, each 3–4 times as long as broad; clava hardly broader than funicle, 6·5–8·5 times as long as broad. Genitalia (Fig. 586): digitus with 3 teeth.

Femora usually yellow, sometimes more or less darkened.

MATERIAL EXAMINED

Many ♂, ♀. **Azores**, **Czechoslovakia**, **Denmark**, **France**, **Germany**, **Great Britain**, **Hungary**, **Italy**, **Netherlands**, **Norway**, **Spain**, **Sweden**, **Switzerland**, **Tunisia**, **U.S.S.R.**, **U.S.A.**

HOSTS. *Mayetiola destructor* (Say), *M. phalaridis* Barnes, *Dasineura leguminicola* (Lintner) and occasionally their parasites such as *Homoporus destructor* (Say) *Platygaster zosine* Walker and *P. herrichi* Packard.

COMMENTS. *A. zosimus* shows extraordinary variation in several characters, particularly the proportions of the antennal segments and the shape of the gaster. It is possible that it comprises a complex of 'sibling species' though there is no firm evidence of this.

I once captured (Great Britain: England, Berkshire, Bagley Wood, 11.ix.1959) a remarkable teratological ♀ of *zosimus*. This possess the normal eyes and ocelli, but arising from the occiput, just behind the ocellar triangle, there is a globular excrescence surmounted by a third compound eye! Also a gynandromorph having ♀ body but ♂ antennae (Great Britain: Berkshire, Wytham Wood, 5.ix.1959).

Aprostocetus (Aprostocetus) menius (Walker) **sp. rev.**

(Figs 296, 477, 597)

Cirrospilus Menius Walker, 1839*c*: 179. Lectotype ♂, GREAT BRITAIN, near London (BMNH), designated by Graham (1961*b*: 53) [examined].

Earlier (Graham, 1961*b*: 53) I placed *menius* as a synonym of *Aprostocetus dotus* (Walker). This synonymy is incorrect and *menius* is now regarded as a valid species.

♀. Head 1·10–1·15 times as broad as mesoscutum, about 2·5 times as broad as long; temples extremely short; POL 1·2–1·3 OOL, OOL nearly twice OD. Eyes about 1·3 times as long as broad, separated by about 1·2 times their length. Malar space 0·6 length of eye, sulcus weakly curved. Mouth hardly greater than malar space. Antenna (Fig. 296) with scape abut 0·8 length of eye, reaching about to lower edge of median ocellus; pedicellus plus flagellum 1·05–1·15 times breadth of mesoscutum; pedicellus nearly or just as long as F1, 2·2–2·5 times as long as broad; funicle proximally hardly stouter than pedicellus but thickening slightly distad; funicular segments decreasing very slightly in length, F1 1·7–2·3 times, F2 1·7–2·0 times, F3 1·2–1·6 times as long as broad; clava broader than F3, 2·1–2·6 times as long as broad, as long as or slightly longer than F2 plus F3, rather pointed, with terminal spine nearly as long as C3, having a short apical seta; sensilla sparse, uniseriate. Thorax 1·6–1·7 times as long as broad; propodeal slope 50°–60°. Pronotum up to 0·3 length of mesoscutum. Mid lobe of mesoscutum about as long as broad, only moderately shiny, with extremely fine superficial or very slightly raised reticulation having areoles 2·0–2·5 times as long as broad in the posterior half of the sclerite; median line visible in some lights, at least in posterior half; 4–6 adnotaular setae on each side. Scutellum 1·25–1·35 times as broad as long, strongly convex, with engraved reticulation which is much finer than that of mesoscutum and has shorter areoles; submedian lines equidistant from each other and from sublateral lines, or a little nearer to each other than to sublaterals, enclosed space 2·0–2·8 times as long as broad; setae equal, their length nearly or quite equal to distance between submedian lines, anterior pair about in middle. Dorsellum 2·1–2·7 times as broad as long. Propodeum neither very broadly nor deeply emarginate, but medially only 0·5–0·7 length of dorsellum; median carina distinct. Legs rather short, moderately thick; hind femora 3·6–3·8 times as long as broad; spur of mid tibia about 0·75 length of basitarsus, fourth tarsal segment slightly shorter than basitarsus. Forewing 2·15–2·25 times as long as broad; costal cell 10·0–11·5 times as long as broad, row of 4–9 setae on its lower surface broken medially, usually widely so; *SM* with 4–5 dorsal setae; *M* rather thin, 3·4–4·5 times length of *ST*, its front edge with 10–14 setae; *ST* at 45°–50°, nearly straight, thin proximally but expanding gradually to form a narrow stigma with distinct uncus; *PM* a distinct stub; speculum small, not extending below *M*, closed below; usually a small bare area between *ST* and *PM*; wing beyond speculum moderately densely pilose. Hindwing bluntly pointed; cilia 0·27–0·40 breadth of wing. Gaster long-ovate to sublanceolate, 1·05–1·20 times length of head plus thorax, nearly or about as broad as thorax, acute and sometimes slightly acuminate, 2·1–2·6 times as long as broad; last tergite about as long as broad; longest seta of each cercus 1·6–1·8 times length of next longest; ovipositor sheaths projecting slightly, up to 0·3 length of hind tibia, rather stout in profile; tip of hypopygium at about 0·5 length of gaster.

Body black with olive to dull bluish green or bluish tints; in darker forms with clypeus, mouth-edge and upper angle of mesopleuron more or less testaceous; dorsellum with at least an obscure testaceous spot on each side, sometimes these spots joined or the whole dorsellum yellow. In pale forms testaceous or reddish testaceous markings are developed to a greater or less extent, with much the same distribution as in *fabicola* (q.v.). Antennal scape black, slightly metallic, its tip and the flagellum brown. Coxae and proximal half to two-thirds of all femora, black with metallic tints; trochanters mainly to wholly, tips of femora, and all tibiae, yellow; fore tarsi fuscous, mid and hind tarsi fuscous with first segment, often also the second, yellow; in pale forms fore coxae partly yellow and femora less broadly black. Tegulae in dark forms fuscous with front edge yellowish, in pale forms wholly yellow. Wings hyaline or subhyaline; venation yellow to testaceous. Length 1·4–2·0 mm.

♂. Antenna (Fig. 477) with scape as long as eye, reaching slightly above vertex, tapering strongly upwards, 3·1–3·6 times as long as broad, with ventral plaque 0·20–0·25 length of scape, its upper end slightly below the middle; pedicellus plus flagellum 1·9–2·1 times breadth of mesoscutum; pedicellus as long as or a little longer than F1, about 1·7 times as long as broad; funicle proximally slightly stouter than pedicellus, tending to taper very slightly distad; F1 much shorter than following segments, 1·0–1·5 times as long as broad, following segments equal in length, each 2·0–2·5 times as long as broad; clava not broader than F4, about as long as F3 plus F4, 4·5–5·5 times as long as broad; whorled setae moderately long, those of F1 reaching slightly beyond middle of F3. Genitalia (Fig. 597).

Body (in British specimens, the only ones seen) dark, with at most mouth-edge, dorsellum and upper angle of mesopleuron pale. Hind tibiae sometimes a little infuscate medially, occasionally also the mid tibiae.

MATERIAL EXAMINED

5 ♂, many ♀. **Andorra**, **Czechoslovakia**, **France**, **Great Britain**, **Hungary**, **Spain**.

HOST. Bouček reared 3 females from pupae of a nematocerus dipteron (Czechoslovakia: Piletice, near Hradec Králové, vi.1952).

Aprostocetus (Aprostocetus) flavus sp. n.

(Fig. 287)

♀. Head about as broad as mesoscutum (but somewhat collapsed); ratio POL: OOL not accurately measurable. Eyes 1·4 times as long as broad, virtually bare. Malar space 0·70–0·75 length of eye, sulcus straight. Mouth about equal to malar space. Antenna (Fig. 287) with scape 0·8 length of eye, hardly reaching median ocellus; pedicellus plus flagellum 1·25–1·30 times breadth of mesoscutum; pedicellus about twice as long as broad, not quite as long as F1; funicle proximally slightly stouter than pedicellus, thickening very slightly distad, its segments decreasing very slightly in length, F1 2·3–2·4 times, F2 about twice, F3 1·55–1·60 times as long as broad; clava very slightly broader than F3, about as long as F2 plus F3, 3·2 times as long as broad, with C1 and C2 equal in length, each subquadrate, C3 very short, spine about 0·6 length of C3, with apical seta as long as spine; sensilla moderately numerous, uniseriate, rather long, subdecumbent with slightly projecting tips. Thorax 1·25–1·35 times as long as broad; propodeal slope 60°. Pronotum short. Mid lobe of mesoscutum slightly broader than long, moderately convex, slightly shiny, reticulation excessively fine, engraved, most areoles about 3 times as long as broad; median line visible anteriorly but evanescent in posterior half; 3–4 white adnotaular setae on each side. Scutellum 1·4 times as broad as long, moderately strongly convex, more finely sculptured than mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·2 times as long as broad; setae equal, white, their length slightly less than distance between submedian lines, anterior pair about twice as far from front edge of sclerite as from posterior setae. Dorsellum 3–4 times as broad as long. Propodeum almost nil medially, or at most half as long as dorsellum; other features much as in *caudatus*. Legs slender; hind coxae slightly oblique; hind femora nearly 5 times as long as broad; spur of mid tibia 0·4 length of basitarsus, fourth tarsomere about half as long as basitarsus. Forewing 2·5 times as long as broad; costal cell distinctly shorter than *M*, 12·5 times as long as broad; *SM* with 3–4 dorsal setae; *M* 3·90–4·25 times length of *ST*, its front edge with 11–14 setae; *ST* at 50°, rather thin proximally, stigma small and oblong; *PM* rudimentary; speculum small but extending as a narrow strip below *M* as far as *ST*; wing just beyond speculum rather sparsely pilose, but more thickly distad; cilia 0·35 length of *ST*. Hindwing subobtuse; cilia 0·33 breadth of wing. Gaster linear-lanceolate, 1·20–1·35 length of thorax, much narrower than thorax (due to collapse), 4·5–5·0 times as long as broad, strongly acuminate; last tergite 2·0–2·3 times as long as broad; ovipositor sheaths plus postcercale 1·00–1·35 times length of hind tibia, sheaths 1·3–1·5 times length of postcercale; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium distinctly beyond half length of gaster.

Pale yellow; fuscous dots on each side of frons, at prothoracic spiracles, and on side of each axilla near base of forewing; propodeum fuscous medially; mesosternum more or less black; postcercale brownish; ovipositor sheaths fuscous over the distal half of their projecting portion. Pedicellus dorsally in proximal half, and flagellum, blackish. Pretarsus of all legs fuscous. Length including ovipositor 1·85–2·00 mm.

♂. Antenna with scape fully as long as eye, reaching level of vertex, 2·4 times as long as broad, broadest in lower half and tapering upwards, with ventral plaque 0·3 length of scape and placed wholly in lower half; pedicellus plus flagellum 1·65 times breadth of mesoscutum; pedicellus 1·95 times as long as broad, distinctly longer than F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad; F1 hardly half as long as F2, quadrate, following segments decreasing very slightly in length, F2 2·2 times, F3 2·1 times, F4 1·8 times as long as broad; clava hardly broader than F4, slightly longer than F3 plus F4, 4·5 times as long as broad, with C1 and C2 subequal in length, each 1·8 times as long as broad, C3 shorter; whorled setae very long, those of F1 reaching to tip of F3. Genitalia: digitus with 2 teeth on hind edge, short and directed obliquely.

Yellow; fuscous markings as in ♀ but rather more extensive, propodeum mainly black, front of mesoscutum brownish, gaster with a transverse blackish band just before apex. Ventral plaque of scape fuscous.

MATERIAL EXAMINED

1 ♂, 3 ♀. Holotype ♀, **Turkey**: Narman-Eri, 14.vii.1980 (*M. Doglanar*) (BMNH).
Paratypes. 1 ♂, 2 ♀, same data as holotype (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) caudatus Westwood **comb. rev.**

(Figs 297, 299, 470, 596, 676, 706)

Aprostocetus caudatus Westwood, 1833: 444; Graham, 1961*b*: 52. Lectotype ♀, GREAT BRITAIN: Surrey, Coombe (UM), designated by Graham (1961*b*: 52) [examined].

Cirrospilus Mutilia Walker, 1839*a*: 322. Lectotype ♀, IRELAND (BMNH), designated by Graham (1961*b*: 52) [examined]. [Synonymized by Graham, 1961*b*: 52.]

Cirrospilus Trabea Walker, 1839*a*: 323. LECTOTYPE ♀, IRELAND (BMNH), here designated [examined]. [Synonymized by Graham, 1961*b*: 52.]

Cirrospilus Phalis Walker, 1839*d*: 418. Lectotype ♀, GREAT BRITAIN (BMNH), designated by Graham (1961*b*: 52) [examined]. **Syn. n.**

Tetrastichus crassicauda Thomson, 1878: 293. LECTOTYPE ♀, SWEDEN: Öland (ZI), here designated [examined]. [Synonymized by Graham, 1961*b*: 52.]

Tetrastichus caudatus (Westwood) Domenichini, 1966*a*: 153; 1966*b*: 22.

Earlier (Graham, 1961*b*: 53) I referred to the single ♀ standing under *Cirrospilus trabea* in BMNH but was not sure if it was a Haliday specimen as required by the original description. It certainly dates from the right time and as it agrees with Walker's description and there is no positive evidence against its being a Haliday specimen, I now designate it lectotype.

I have re-examined the lectotype of *Cirrospilus phalis* Walker and am now convinced that it is a dwarf of *caudatus* Westwood.

The syntypic series of *Tetrastichus crassicauda* Thomson comprises 8 specimens; that selected as lectotype is labelled 'Ö' [Oland].

♀. Head (Fig. 299) as broad as or slightly broader than mesoscutum, 2·3–2·4 times as broad as long; POL about 1·7 OOL, OOL 1·7–1·8 OD. Eyes about 1·5 times as long as broad. Malar space about 0·6 length of eye, sulcus virtually straight. Mouth 1·15 times malar space. Antenna (Fig. 297) with scape about 0·7 length of eye, not reaching median ocellus; pedicellus plus flagellum a little greater than breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, usually about as long as F1 though very slightly longer in small specimens; anelli (Fig. 706); funicle proximally hardly stouter than pedicellus, thickening slightly distad, its segments subequal or decreasing very slightly in length, F1 1·6–1·8 times, F2 1·5–1·8 times, F3 1·2–1·5 times as long as broad; clava distinctly broader than F3, somewhat longer than F2 plus F3, 2·2–2·6 times as long as broad, bluntly pointed, with C1 and C2 quadrate or slightly transverse, spine about 0·5 length of C3, apical seta somewhat shorter than spine; sensilla uniseriate, rather sparse on funicular segments, moderately long, most decumbent, some with slightly projecting tips; F1 with only moderately long setae, F2, F3, C1 and C2 also with some long setae which arise near the base of each segment and reach slightly beyond its tip. Thorax about 1·5 times as long as broad; propodeal slope 50°. Pronotum very short. Mid lobe of mesoscutum about as broad as long, moderately convex, slightly shiny, with extremely fine but rather sharp superficial or engraved reticulation having most areoles about 3 times as long as broad; median line very fine but nearly always traceable in some lights; 2–4 fine adnotaular setae on each side. Scutellum 1·25–1·40 times as broad as long, moderately strongly convex, more finely sculptured than mesoscutum and with areoles shorter; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length nearly or just as great as distance between submedian lines, anterior pair approximately in middle. Dorsellum 2·7–3·0 times as broad as long. Propodeum broadly and deeply emarginate, medially at least very slightly shorter than dorsellum, moderately shiny, with fine, hardly raised reticulation; median carina only slightly raised; callus with 2 setae. Legs moderately long, rather slender; hind coxae somewhat more than twice as long as broad, shiny, with fine, hardly raised reticulation; hind femora about 4 times as long as broad; spur of mid tibia 0·60–0·65 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·35–2·50 times as long as broad; costal cell distinctly shorter than *M*, 13–15 times as long as broad, lower surface with a row of setae; *SM* with 3–5 dorsal setae; *M* thin, 3·3–4·0 times length of *ST*, its front edge with 11–16 setae; *ST* at 40°–45°, very thin proximally but gradually expanding to form a small narrow stigma; *PM* a short stub; speculum very small, not extending below *M*; wing beyond it rather densely and uniformly pilose, the setae short; cilia 0·55–0·75 length of *ST*. Hindwing sharply pointed, in small specimens strongly acute; cilia 0·5–0·6 breadth of wing. Gaster lanceolate, with curved sides (Fig. 299), about as broad as thorax, including the postcercale 3·0–3·8 times as long as broad; last tergite 1·6–2·0 times as long as broad, postcercale posteriorly with a few long setae; projecting part of ovipositor sheaths about as long as postcercale, sheaths clothed with setae which in dorsal view stand out slightly but do not form a tuft near their tips; longest seta of each cercus nearly twice length of next longest, slightly kinked; tip of hypopygium at about 0·4 length of gaster. Hypopygium (Fig. 676).

Body black, with rather weak metallic tints which are usually bluish or olive; upper angle of mesopleuron testaceous, often also mouth-edge, sutures of face, scapular flanges and sides of dorsellum. Antennal scape and pedicellus black, their tips sometimes testaceous; flagellum brown to fuscous. Coxae, and femora except their tips, coloured like body; trochanters yellow to fuscous; tips of fore and mid femora more broadly, of hind femora narrowly, yellow to testaceous; tibiae yellow or testaceous, often more or less infuscate medially, sometimes black with bases and tips pale; fore tarsi fuscous, mid and hind tarsi either testaceous proximally darkening to their tips, or wholly fuscous. Tegulae fuscous, or yellow anteriorly or wholly yellow. Wings hyaline, venation testaceous to brown. Length of body including postcercale 1·0–1·9 mm; of body plus ovipositor 1·0–2·1 mm.

♂. Antenna (Fig. 470) with scape 0·95 length of eye, reaching slightly above vertex, about 2·4 times as long as broad, with ventral plaque 0·42–0·45 length of scape, placed about in middle; pedicellus plus flagellum

1·85 times breadth of mesoscutum; pedicellus twice as long as broad, slightly longer than F1; flagellum proximally slightly stouter than pedicellus, tapering slightly distad; F1 shorter than F2, not or hardly longer than broad; following segments subequal in length, each about twice as long as broad; clava longer than F3 plus F4, about 6 times as long as broad, with C1 and C2 each fully twice as long as broad, C3 shorter; whorled setae long, those of F1 reaching somewhat beyond tip of F3. Genitalia (Fig. 596).

Colour as ♀.

MATERIAL EXAMINED

1 ♂, many ♀. **Austria**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Greece**, **Hungary**, **Ireland**, **Italy**, **Netherlands**, **Sweden**, **Yugoslavia**.

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae on grasses. I have swept large numbers of ♀ from *Elymus* (= *Agropyron*) *farctus* subsp. *boreali-atlanticus* and others from stands of *E*. (= *A*.) *repens* in England.

Aprostocetus (Aprostocetus) ciliatus (Nees) **comb. n.**

(Figs 298, 470, 595)

Eulophus ciliatus Nees, 1834: 189. Syntypes ♂ ♀, GERMANY: near Sickershausen (destroyed). NEOTYPE ♀, GREAT BRITAIN: England, Berkshire, Windsor Forest, 9.vii.1973 (*Graham*) (BMNH), here designated [examined].

Nees (1834: 189) stated that he had taken a male and a female *in copula* on a panicle of the grass *Festuca rubra*, on 7th June 1809. This pair does not exist amongst the remnants of the Nees collection (UM; NM) and is presumed destroyed. The neotype fits the original description well. The species considered to be *ciliatus* by Domenichini (1966*a*: 184) following the unpublished opinion of Erdös, agrees less well; it belongs to the *pausiris*-group (see *meridionalis*).

♀. Differs from ♀ *caudatus* in the characters given in the key to females, couplet 97. Antenna (Fig. 298) with pedicellus 2·0–2·5 times as long as F1, with fewer setae than in *caudatus*; funicle proximally (unless distorted) not quite as stout as pedicellus; F1 slightly to very distinctly shorter than F2 and varying from slightly transverse to very slightly longer than broad, without sensilla, F2 and F3 subequal in length, F2 1·5–1·7 times, F3 1·3–1·6 times as long as broad. Forewing: *SM* with 3 dorsal setae; *M* with 8–13 setae on front edge.

Body sometimes brown instead of black; mouth-edge often more or less, dorsellum often partly to wholly, testaceous. Length including ovipositor sheaths 0·9–1·1 mm.

♂. Antenna (Fig. 472) with ventral plaque of scape about 0·28 length of scape; pedicellus not quite twice as long as broad; clava about 5 times as long as broad. Other features as in ♂ *caudatus*. Genitalia (Fig. 595).

Colour as in ♀. Length 0·65–0·80 mm.

MATERIAL EXAMINED

Many ♂, ♀. **France**: 2 ♂, 3 ♀, Aveyron, Gorges du Trévézel, 31.vii.1974; several ♂, ♀, Bouches du Rhône, Fonscolombe, 19.vii.1978 (*Graham*) (BMNH). **Great Britain**: 8 ♂, 26 ♀, England, Berkshire, Windsor Forest, 9.vii.1973; 5 ♀, Middlesex, Southgate, 11.viii.1970, 4 ♀, 6.vi.1971 (*Graham*) (BMNH).

HOST. Unknown. The neotype and most of the other material noted above was swept from *Agrostis* sp. (Gramineae). The host, or hosts, of *ciliatus* are likely to be Diptera: Cecidomyiidae on fine grasses belonging to *Agrostis* and *Festuca*.

Aprostocetus (Aprostocetus) terebrans Erdös **comb. rev.**

(Figs 303, 306, 471, 594)

Aprostocetus terebrans Erdös, 1954: 353; Graham, 1961*b*; 54. LECTOTYPE ♀, HUNGARY: Bakony (*Erdös*) (TM), here designated [examined].

Tetrastichus terebrans (Erdös) Domenichini, 1966*a*: 152; 1966*b*: 51; Erdös, 1971: 214–215; Kostjukov, 1978*b*: 457.

♀. Differs from ♀ of *caudatus* in having ovipositor sheaths plus postcercale (Fig. 303) 1·8–2·0 times length of hind tibia; postcercale slightly shorter than or just as long as the longest cercal seta. Antenna (Fig. 306).

Body obscurely testaceous, brown or fuscous, with very weak olivaceous metallic tint on head and thorax (hardly perceptible in paler specimens). Body length 1·00–1·35 mm; length of body plus ovipositor 1·50–1·85 mm.

♂. Differs from ♂ of *ciliatus* in having ventral plaque of scape (Fig. 471) about 0·33 length of scape; clava about 6 times as long as broad. Differs from ♂ of *caudatus* in smaller size and fuscous to brownish testaceous body. Genitalia (Fig. 594).

MATERIAL EXAMINED

3 ♂, 31 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Hungary**, **Ireland**, **Norway**, **Sweden**.

HOST. Unknown. The species occurs on grasses.

Aprostocetus (Aprostocetus) leucone (Walker) **comb. rev.**

(Figs 302, 469, 708)

Cirrospilus Leucone Walker, 1839*a*: 325. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 53) [examined].

Eulophus longicaudatus Förster, 1841: 42. LECTOTYPE ♀, WEST GERMANY: Aachen (BMNH), here designated [examined]. [Synonymized by Graham, 1961*b*: 53.]

Tetrastichus dolichurus Thomson, 1879: 293. LECTOTYPE ♀, SWEDEN: Öland (ZI), here designated [examined]. [Synonymized by Graham, 1961*b*: 53.]

Aprostocetus leucone (Walker) Graham, 1961*b*: 53.

Tetrastichus leucone (Walker) Domenichini, 1966*a*: 151; 1966*b*: 37.

Two card-pointed Förster specimens, conspecific and both ♀, stand under the name *Eulophus longicaudatus* in BMNH. The first specimen, labelled 'Eulophus longicaudatus Foerst. Aachen', now bears my lectotype label. The second female is labelled paralectotype.

Seven syntypes stand as *Tetrastichus dolichurus* in Thomson's collection (ZI). The lectotype is labelled 'Ö' [Öland] and (in Thomson's handwriting) 'dolichurus Ths.'. The remaining specimens are labelled paralectotypes.

♀. Differs from ♀ of *caudatus* as follows. Ovipositor sheaths (Fig. 302) longer, sheaths plus postcercale 1·8–2·0 times length of hind tibia; postcercale normally 0·30–0·33 length of projecting part of ovipositor sheaths (rarely as much as 0·5 in aberrant specimens), tapering, much longer than longest cercal seta, bearing more numerous, somewhat outstanding setae. Gaster narrower and more elongate, with nearly parallel sides, including postcercale 4·0–5·5 times as long as broad. Anelli (Fig. 708).

Colour as in *caudatus*. In specimens from northern Europe the hind tibiae are often more or less infuscate medially, occasionally mainly dark, whilst the mild tibiae often have an infuscate median ring. In those from southern Europe the tibiae are usually pale, occasionally slightly infuscate. The tegulae may be wholly testaceous, more or less infuscate posteriorly, or wholly fuscous. Length of body including postcercale 1·4–2·5 mm, of body plus ovipositor 2·0–3·6 mm.

♂. Antenna (Fig. 469) with scape about 0·9 length of eye, reaching nearly to level of vertex, 2·4–2·8 times as long as broad, with ventral plaque 0·53–0·56 length of scape; pedicellus plus flagellum 2·15–2·30 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, as long as or slightly longer than F1; funicle distinctly stouter than pedicellus, filiform or hardly tapering distad, F1 distinctly shorter than F2 and about 1·5 times as long as broad, following segments subequal in length, F2 2·0–2·3 times as long as broad, F3 and F4 each 2·2–2·5 times as long as broad; clava not broader than F4, slightly longer than F3 plus F4, 5–6 times as long as broad, with C1 and C2 each twice or somewhat more than twice as long as broad, C3 much shorter; whorled setae moderately long, those of F1 reaching distinctly beyond tip of F2.

Differs from ♂ of *verutus* only in the colour characters given in the key to males, couplet 20. Some males which are casually swept may be very difficult to distinguish. Differs from ♂ of *caudatus* in having ventral plaque of scape (Fig. 469) longer, flagellum longer, and F1 slightly longer than broad and as long as the pedicellus.

MATERIAL EXAMINED
4 ♂, many ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Italy**, **Norway**, **Sweden**, **Yugoslavia**.

HOST. Unknown. Probably associated with some species of Diptera: Cecidomyiidae on grass, in relatively dry situations.

COMMENT. On 21.vii.1981 I found immense numbers of ♀ *leucone* on a south-facing grassy slope at 1150 m on Mont Ventoux (France: Vaucluse). There were probably many thousands. I took several hundred as a sample, also the 4 ♂ noted above.

Aprostocetus (Aprostocetus) verutus Graham **comb. rev.**

(Figs 304, 305, 592)

Aprostocetus verutus Graham, 1961*a*: 26–27. Holotype ♀, GREAT BRITAIN: England, Berkshire, Wytham, 19.vii.1953 (*Graham*) (UM) [examined].
Tetrastichus verutus (Graham) Domenichini, 1966*a*: 153; 1966*b*: 53.

♀. For a full description see Graham (1961*a*). Forewing (Fig. 305). Gaster (Fig. 304).

♂. Differs from ♂ of *leucone* only in the colour characters given in the key to males, couplet 20. Genitalia (Fig. 592).

MATERIAL EXAMINED
18 ♂, many ♀. **Great Britain**.

HOST. Unknown. Probably some species of Diptera: Cecidomyiidae. I have found *verutus* only in marshy places, amongst *Phalaris* and *Phragmites*. The closely related *leucone* does not seem to occur in such situations.

Aprostocetus (Aprostocetus) longicauda (Thomson) **comb. rev.**

(Figs 300, 301)

Tetrastichus longicauda Thomson, 1878: 292. Lectotype ♀, SWEDEN: Lund (ZI), designated by Graham (1961*b*: 54) [examined].
Aprostocetus longicauda (Thomson) Graham, 1961*b*: 54.
Tetrastichus longicauda Thomson; Domenichini, 1966*a*: 152; 1966*b*: 38.

♀. Head about as broad as mesoscutum, about 2·5 times as broad as long; POL nearly twice OOL, OOL about 1·8 OD. Eyes about 1·4 times as long as broad, virtually bare. Malar space 0·6 length of eye, sulcus nearly straight. Mouth about 1·5 malar space. Antenna (Fig. 300) with scape 0·8 length of eye, just reaching median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus nearly or just twice as long as broad, about as long as F1; funicle proximally hardly stouter than pedicellus, thickening distad, its segments decreasing slightly in length, F1 1·9–2·1 times, F2 1·5–1·7 times, F3 1·00–1·25 times as long as broad; clava distinctly broader than F3, as long as or somewhat longer than F2 plus F3, 2·05–2·15 times as long as broad, with spine about 0·3 length of C3, apical seta as long as spine; sensilla relatively sparse, uniseriate. Thorax about 1·4 times as long as broad; propodeal slope about 60°. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately shiny, with extremely fine superficial reticulation, most areoles about 3 times as long as broad; median line fine; 3–4 (–5) adnotaular setae on each side. Scutellum about 1·3 times as broad as long, strongly convex, sculptured like mesoscutum but with shorter areoles; submedian lines equidistant from each other and from sublateral lines, or hardly nearer the latter, enclosing a space 2·25–2·50 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair about in middle. Dorsellum 2·3–2·8 times as broad as long, hind edge curved. Propodeum broadly and deeply emarginate, medially about 0·5 length of dorsellum. Legs of medium length; hind coxae oblique, about twice as long as broad, shiny, with very fine superficial reticulation; hind femora about 4·5 times as long as broad; spur of mid tibia 0·6 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·25–2·35 times as long as broad; costal cell shorter than *M*, 9·5–11·0 times as long as broad; *SM* with 3–4 (–5) dorsal setae; *M* not very thin, 3·7–4·2 times length of *ST*, its front edge with 11–15 setae; *ST* thin proximally but gradually expanding distad, stigma moderate-sized; *PM* a distinct stub; speculum small, not extending below *M*; wing beyond it moderately thickly pilose; cilia 0·25–0·40 length of *ST*. Hindwing bluntly pointed; cilia 0·30–0·35 breadth of wing. Gaster lanceolate, as long as or slightly longer than head plus thorax, nearly or quite as broad as thorax, 2·1–2·8 times as long as broad, acute but not acuminate; last tergite (Fig. 301) rather small, forming an equilateral triangle; ovipositor sheaths 6–8 times as long as postcercale, the latter usually slightly shorter than longest cercal seta; longest seta of each cercus about 1·6 length of next longest, slightly curved; tip of hypopygium at 0·5 length of gaster.

Body black with bright green to blue metallic tints; mouth-edge sometimes testaceous, occasionally also the dorsellum more or less. Antennae fuscous to black. Coxae coloured like the body; trochanters yellow, or partly infuscate; fore and mid femora with about proximal half coloured like body, proximal two-thirds to three-quarters of hind femora similarly coloured; tibiae yellowish, mid tibiae occasionally, hind tibiae rarely, with brownish postmedian ring; fore tarsi blackish, mid and hind tarsi pale at base, gradually darkening to tips. Tegulae yellow, their hind edge usually more or less infuscate. Wings hyaline, venation brown to fuscous. Length of body 1·3–1·7 mm; of body plus ovipositor 1·9–2·4 mm.

♂. Unknown.

MATERIAL EXAMINED

39 ♀. **Czechoslovakia**, **France**, **Great Britain**, **Greece** (Crete), **Italy**, **Sweden**, **Turkey**.

HOST. Unknown. Possibly some species of Diptera: Cecidomyiidae on grass.

***Aprostocetus (Aprostocetus) craneiobiae* sp. n.**

(Fig. 319)

♀. Head nearly 2·5 times as broad as long; POL about 1·7 times OOL, OOL about 1·5 OD. Eyes 1·4 times as long as broad, separated by 1·25 their length. Malar space 0·66 length of eye. Mouth 1·25 malar space. Antenna (Fig. 319) with scape somewhat shorter than eye, reaching lower edge or middle of median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus very slightly shorter than F1, 2·0–2·2 times as long as broad; funicle proximally slightly stouter than pedicellus, thickening a little distad, its segments decreasing slightly in length, F1 2·0–2·5 times, F2 1·8–2·0 times, F3 1·5–1·6 times as long as broad; clava distinctly broader than F3, 2·3–2·7 times as long as broad, rather obtuse, with C1 about as long as broad, C2 and C3 progressively shorter, spine about 0·25 length of C3; sensilla moderately numerous, irregularly uniseriate. Thorax about 1·5 times as long as broad, strongly arched dorsally. Mid lobe of mesoscutum slightly broader than long, only slightly shiny, reticulation extremely fine and superficial, with most areoles about twice as long as broad; median line very distinct; 3–5 adnotaular setae on each side. Scutellum about 1·3 times as broad as long, strongly convex, more finely reticulate than mesoscutum; submedian lines not, or only slightly, nearer to sublateral lines than to each other, enclosed space 1·85–2·50 times as long as broad; anterior setae behind the middle and about twice as far from front edge of scutellum as from posterior setae. Propodeum rather strongly transverse, rather broadly emarginate posteriorly, medially as long as or somewhat shorter than dorsellum; median carina sharp, thin and weakly foveate in front but rapidly expanding caudad. Legs of medium length and thickness; hind coxae oblique, about twice as long as broad; hind femora 4 times as long as broad; spur of mid tibia 0·9 length of basitarsus; fourth segment of mid and hind tarsi slightly shorter than basitarsus. Forewing with costal cell somewhat shorter than *M*, 8·0–12·5 times as long as broad; *SM* with 4–5 dorsal setae; *M* 3·7–4·1 times length of *ST*, its front edge with 10–18 setae; *PM* a short stub; *ST* at about 45°, slightly curved, rather thin proximally but expanding beyond half its length to form a small stigma which is longer than high; speculum moderate-sized, closed below, extending as a narrow wedge below *M*, wing just beyond it rather sparsely pilose, more thickly distad; cilia 0·2–0·4 length of *ST*. Hindwing obtuse; cilia 0·15–0·20 breadth of wing. Gaster lanceolate, 1·8–2·0 times as long as thorax, 2·25–2·60 times as long as broad, slightly acuminate, about as broad as thorax; last tergite usually as long as or up to 1·5 times as long as broad, occasionally a little broader than long; longest seta of each cercus 1·5–1·6 times length of next longest; ovipositor sheaths projecting somewhat.

Body black with bluish metallic tint; dorsellum with a pale spot on each side, or almost wholly pale. Antennae fuscous to black with scape beneath, pedicellus beneath and at apex, testaceous. Coxae coloured like body; trochanters partly pale; femora black with tips rather narrowly testaceous; fore tibiae pale or partly infuscate, mid and hind tibiae broadly infuscate medially or mainly black, their bases and tips testaceous; fore tarsi fuscous, mid and hind tarsi pale with third segment brownish, fourth fuscous. Tegulae black with metallic tint. Wings hyaline, venation yellowish to testaceous. Length 1·2–2·4 mm.

♂. Unknown.

MATERIAL EXAMINED

17 ♀. Holotype ♀, **Netherlands**: Wageningen, iv.1972, reared from *Craneiobia lawsonianae* on *Chamaecyparis lawsoniana* (*W. C. Nijveldt*) (ITZ).

Paratypes. 10 ♀, same data as holotype but reared iii.1972; 3 ♀, Wageningen, reared ii.1982 from cones of *Chamaecyparis lawsoniana* with *Janetiella siskiyou* Felt, 3 ♀ reared spring 1983 (*W. C. Nijveldt*) (ITZ).

HOSTS. *Craneiobia lawsonianae* de Meijere and *Janetiella siskiyou* Felt.

COMMENTS. This species is assigned provisionally to the *caudatus*-group but a definite placing must await the discovery of the male, or other evidence. It somewhat resembles *rhipheus* and *meroe*, but such resemblance may be superficial. It is not certain whether *A. craneiobiae* is European or an introduction. One of its hosts, *Craneiobia lawsonianae*, has been known in the Netherlands since 1931 but the other, *Janetiella siskiyou*, originates from the U.S.A.

Aprostocetus (Aprostocetus) meroe sp. n.

(Figs 320, 321, 324, 468, 598)

♀. Head about as broad as mesoscutum, 2·3–2·4 times as broad as long; POL 1·6–1·7 OOL, OOL hardly more than 1·5 OD. Eyes 1·30–1·35 times as long as broad, separated by 1·25 times their length. Malar space about 0·55 length of eye, sulcus nearly straight. Mouth about 1·3 malar space. Head rather dull, with extremely fine though rather sharply engraved reticulation; length of setae of vertex nearly equal to OD. Antenna (Fig. 320) with scape about 0·78 length of eye, about 3·5 times as long as broad, reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus about twice as long as broad, as long as or very slightly longer than F1; funicle proximally about as stout as pedicellus, thickening very slightly distad, its segments subequal or decreasing very slightly in length, F1 1·7–2·1 times, F2 1·6–2·0 times, F3 1·4–1·7 times as long as broad; clava slightly broader than F3, hardly or slightly longer than F2 plus F3, 2·3–2·6 times as long as broad, with C1 not or hardly longer than broad and occupying slightly less than half the total length, C2 somewhat shorter and subquadrate, C3 still shorter, spine rather slender, about 0·33 length of C3, with apical seta about as long as spine; sensilla rather sparse on funicle, moderately numerous on clava, irregularly uniseriate, rather long, most decumbent, some with short projecting tips; setae of flagellum standing out slightly, most shorter than, some about equal to, breadth of segments. Thorax about 1·5 times as long as broad; propodeal slope 45°–50°. Pronotum short, crescentic. Mid lobe of mesoscutum as long as or very slightly longer than broad, moderately convex, moderately shiny, with extremely fine but fairly sharply engraved reticulation having most areoles 3–4 times as long as broad; median line obsolete or extremely fine and visible only in certain lights; 3–4 adnotaular setae on each side. Scutellum about 1·2 times as broad as long, moderately convex, sculptured like mesoscutum but with areoles (at least between the submedian lines) relatively shorter; submedian lines equidistant from each other and from sublateral lines, or slightly nearer the latter, enclosing a space 2·1–2·6 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum 2·1–2·5 times as broad as long, hind edge curved. Propodeum narrowly but moderately deeply emarginate, medially as long as or very slightly shorter than dorsellum, shiny, with fine, delicate reticulation; median carina distinct, broadening posteriorly; spiracles moderate-sized, very close to metanotum; callus with 2 setae. Legs moderately long, rather slender; hind coxae slightly more than twice as long as broad, shiny, with very fine almost engraved reticulation; hind femora slightly more than 4 times as long as broad; spur of mid tibia about 0·66 length of basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing (Fig. 324) 2·2–2·3 times as long as broad; costal cell distinctly shorter than *M*, 11–13 times as long as broad, lower surface with a row of setae; *SM* with 3–5 dorsal setae; *M* rather thin, 3·2–3·8 times length of *ST*, its front edge with 10–16 moderately long setae; *ST* at 40°–45°, thin proximally but gradually expanding to form a small stigma; *PM* a stub, up to 0·33 length of *ST*; speculum small, not extending below *M*; wing beyond it thickly pilose, especially distad; cilia 0·33–0·50 length of *ST*. Hindwing bluntly to sharply pointed; cilia 0·33–0·45 breadth of wing. Gaster lanceolate or sublanceolate, including ovipositor sheaths 2·2–3·0 times as long as broad, 1·1–1·4 times as long as head plus thorax, acute but (if ovipositor sheaths are not counted) not or only slightly acuminate; last tergite (Fig. 321) as long as or slightly longer than broad; ovipositor sheaths projecting by 0·33–0·45 length of last tergite, in dorsal view with the setae on their sides not forming a subapical tuft; longest seta of each cercus nearly twice length of next longest, slightly twisted; tip of hypopygium at about 0·5 length of gaster.

Body black with weak or rather weak bluish to olive-green or bronze tints on head and thorax, the gaster also with bronze tint; upper angle of mesopleuron testaceous, sometimes also mouth-edge and sides or whole of dorsellum. Antennal scape and pedicellus black, flagellum brown to black. Coxae, and femora mainly, coloured like body; trochanters infuscate, trochantelli testaceous to brown; tips of all femora, not very broadly, testaceous or yellow; fore tibiae testaceous, sometimes with longitudinal black stripe, mid and hind tarsi sometimes narrowly testaceous at base. Tegulae blackish. Wings subhyaline or slightly grey-tinged, venation testaceous to brown or fuscous, base of *ST* usually paler. Length 1·3–1·7 mm.

♂. Antenna (Fig. 468) with scape about 0·95 length of eye, reaching vertex or slightly above it, 2·45–2·65 times as long as broad, with ventral plaque 0·50–0·65 length of scape; pedicellus plus flagellum 1·80–1·85 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tending to taper very slightly distad; F1 much shorter than F2 and not or only slightly longer than broad, following segments subequal in length, each 2·0–2·3 times as long as broad; clava hardly broader than F4, about as long as F4 plus F3 plus half of F2, 4·2–5·5 times as long as broad, acute, with C1 and C2 each about twice as long as broad; whorled setae long, those of F1 reaching virtually to tip of F3. Genitalia (Fig. 598).

Colour as in ♀.

MATERIAL EXAMINED

16 ♂, 42 ♀. Holotype ♀, **Great Britain**: England, Oxfordshire, Oxford Canal near Oxford, 21.vi.1956 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♂, 1 ♀, Vaucluse, Mont Ventoux, 1400 m, 14.vii.1983 (*Graham*) (MVG). **Great Britain**: 3 ♂, 6 ♀, England, Middlesex, Southgate, 18.vi.1968, 19 ♀, 8.vii.1969; 12 ♂, 15 ♀, Oxfordshire, Oxford Canal near Oxford, 21.vi.1956 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) rhipheus (Walker) **comb. rev.**

(Figs 322, 323, 475)

? *Cirrospilus Eratus* Walker, 1839*a*: 318. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Cirrospilus Rhipheus Walker, 1839*d*: 416. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Cirrospilus Anyta Walker, 1839*d*: 417. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined]. [Synonymized by Graham, 1961*b*: 52.]

Aprostocetus rhipheus (Walker) Graham, 1961*b*: 52.

Tetrastichus rhipheus (Walker) Domenichini, 1966*a*: 154, in part; 1966*b*: 47, in part.

The lectotype of *Cirrospilus eratus* has the thorax somewhat compressed abnormally and it is difficult to be sure if it is really conspecific with *rhipheus*. Hence I retain the name *rhipheus* for the present species although it was published in August 1839 whereas *eratus* was published the previous January.

♀. Differs from ♀ of *meroe* in the characters given in the key to females, couplet 97. Forewing (Fig. 323). Gaster, distal (Fig. 322).

♂. Antenna (Fig. 475) with scape 0·95–1·00 length of eye, reaching level of vertex, 2·7–2·8 times as long as broad, with ventral plaque 0·35–0·41 length of scape and placed mainly in lower half; pedicellus plus flagellum 1·70–1·85 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2, quadrate; following segments subequal in length, each 1·8–2·2 times as long as broad; clava hardly broader than F4, distinctly longer than F3 plus F4, 4·0–5·5 times as long as broad, with C1 and C2 subequal in length, each 1·8–2·0 times as long as broad, C3 shorter; whorled setae long, those of F1 reaching level with tip of F3.

MATERIAL EXAMINED

9 ♂, 12 ♀. **Czechoslovakia, Great Britain.**

HOST. Unknown.

Aprostocetus (Aprostocetus) anodaphus (Walker) comb. rev.

(Figs 325, 326, 481, 588, 709)

Cirrospilus Anodaphus Walker, 1839*a*: 321. Lectotype ♀, IRELAND: near Belfast (BMNH), designated by Graham (1961*b*: 53) [examined].
Aprostocetus anodaphus (Walker) Graham, 1961*b*: 53.
Tetrastichus anodaphus (Walker) Domenichini, 1966*a*: 152; 1966*b*: 18 (excluding synonym).

Earlier (Graham, 1961*b*: 53) I synonymized *Cirrospilus aega* Walker, 1839, with *anodaphus*. From more extensive study I consider than *aega* represents a distinct species (q.v.).

♀. Head hardly or just as broad as mesoscutum, about 2·5 times as broad as long; temples almost nil; POL 1·3–1·4 OOL, OOL about twice OD. Eyes 1·20–1·25 times as long as broad, separated by about 1·2 times their length. Malar space 0·62–0·66 length of eye, sulcus straight. Mouth 1·15 malar space. Length of setae of vertex slightly less than OD. Antenna (Fig. 326) with scape 0·90–0·97 length of eye, nearly reaching level of vertex; pedicellus plus flagellum 1·30–1·35 times breadth of mesoscutum; pedicellus 2·1–2·5 times as long as broad, at least very slightly shorter than F1; anelli (Fig. 709); funicle much stouter than pedicellus, filiform, its segments equal or hardly decreasing in length, F1 1·9–2·2 times, F2 1·8–2·3 times, F3 1·7–2·5 times as long as broad; clava slightly broader than F3, slightly shorter than or at most as long as F2 plus F3, with C1 1·1–1·5 times as long as broad, C2 and C3 progressively shorter, spine nearly 0·5 length of C3, apical seta slightly shorter than spine; sensilla moderately numerous, uniseriate (often irregularly so on F1), moderately long, decumbent with very shortly projecting tips. Thorax about 1·4 times as long as broad; propodeal slope about 50°. Pronotum short, crescentic. Mid lobe of mesoscutum about as broad as long, only moderately shiny, with extremely fine superficial though rather sharp reticulation having most areoles 2·5–3·0 times as long as broad; median line fine but distinct; 3–4 adnotaular setae on each side. Scutellum about 1·3 times as broad as long, moderately strongly convex, sculptured like mesoscutum but more lightly and with shorter areoles; submedian lines hardly nearer to sublateral lines than to each other, enclosing a space 2·0–2·4 times as long as broad; setae equal, their length somewhat less than distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum 2·5–3·5 times as broad as long, hind edge curved. Propodeum broadly and deeply emarginate, medially distinctly shorter than dorsellum, shiny, with very fine superficial reticulation; median carina very short; spiracles moderate-sized, oval, almost touching metanotum. Legs of medium length, rather slender; hind coxae oblique, about twice as long as broad, with extremely fine superficial reticulation; hind femora fully 4 times as long as broad; spur of mid tibia 0·70–0·75 length of basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing 2·20–2·35 times as long as broad; costal cell distinctly shorter than *M*, 10–12 times as long as broad, lower surface with row of setae, sometimes broken medially; *SM* with 3–5 dorsal setae; *M* not thick, 3·2–4·3 times length of *ST*, its front edge with 11–15 setae; *ST* at about 50°, not very thin proximally, expanded beyond half its length to form a moderate-sized stigma which tends to be slightly bifurcate at apex; *PM* a short stub or rudimentary; speculum small, not extending below *M*; wing beyond it thickly pilose; cilia 0·20–0·25 length of *ST*. Hindwing bluntly pointed or subobtuse; cilia 0·28–0·33 breadth of wing. Gaster (Fig. 325) lanceolate, including ovipositor sheaths 2·85–4·40 times as long as broad, about as broad as thorax, acute and acuminate; last tergite 1·5–2·5 times as long as broad; ovipositor sheaths 0·33–0·40 length of hind tibia, sheaths plus postcercale 0·45–0·75 length of tibia; longest seta of each cercus nearly twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body black with olive to dark blue-green metallic tints, disc of gaster sometimes bronze; upper angle of mesopleuron testaceous; mouth-edge rarely narrowly testaceous, sides of dorsellum occasionally obscurely so. Antennal scape and pedicellus black, flagellum fuscous to black. Coxae, and femora except their tips narrowly to broadly, coloured like body; legs otherwise testaceous to yellowish with trochanters often infuscate, tibiae often more or less infuscate medially, sometimes mainly black; fore tarsi fuscous, mid and hind tarsi pale proximally but darkening to fuscous at tips. Tegulae testaceous, sometimes infuscate posteriorly, or wholly fuscous. Wings hyaline or slightly tinged with grey, venation testaceous to brown. Length 1·9–2·2 mm.

♂. Antenna (Fig. 481) with scape 1·05–1·10 length of eye, reaching somewhat above vertex, about 3 times as long as broad, with ventral plaque 0·34–0·38 length of scape and placed wholly in lower half; pedicellus plus flagellum virtually twice breadth of mesoscutum; pedicellus 1·7–1·8 times as long as broad, slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tapering slightly distad; F1 about half as long as F2, quadrate; following segments subequal or increasing very slightly in length, F2 2·0–2·3 times, F3 and F4 each 2·3–2·7 times as long as broad; clava hardly broader than F4, as long as or hardly longer than F3 plus F4, 4·4–4·6 times as long as broad; whorled setae long but those of F1 not quite reaching tip of F3. Genitalia (Fig. 588).

MATERIAL EXAMINED

7 ♂, 30 ♀. **Great Britain**, **Ireland**, **Netherlands**, **Sweden**.

HOST. *Rhopalomyia ptarmicae* (Vallot), as an endoparasite of the host larva (Gijswijt, 1974).

Aprostocetus (Aprostocetus) aega (Walker)

Cirrospilus Aega Walker, 1839*c*: 181. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 52) [examined].

Previously (Graham, 1961*b*: 52) I placed *aega* in synonymy with *anodaphus* (Walker). Further research indicates that it is a valid species.

♀. Differs from ♀ of *anodaphus* as follows. Antenna with scape 4·2–4·7 times as long as broad; pedicellus plus flagellum about 1·4 times breadth of mesoscutum; pedicellus about twice as long as broad, slightly shorter than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad; funicular segments decreasing slightly in length, F1 2·0–2·5 times, F2 1·9–2·1 times, F3 about 1·75 times as long as broad; clava slightly broader than F3, relatively shorter than in *anodaphus*, 2·70–2·85 times as long as broad, with C1 hardly longer than broad, C2 shorter and slightly transverse, C3 still shorter, spine prominent and about 0·6 length of C3; sensilla moderately numerous, uniseriate, about 0·8 as long as the segments which bear them, decumbent. Spur of mid tibia 0·55 length of basitarsus. Forewing with *M* 2·8–3·5 times length of *ST*. Gaster, including ovipositor sheaths, relatively shorter, 2·25–2·40 times as long as broad, ovipositor sheaths projecting less far, sheaths plus postcercale 0·4–0·6 length of hind tibia.

♂. Two males reared with the females are in too poor condition for accurate description.

MATERIAL EXAMINED

2 ♂, 4 ♀. **Great Britain**: 2 ♂, 3 ♀, England, Devon, Hartland, reared viii. and ix.1962, from gall of *Dasineura glechomae* (Kieffer) (*R. R. Askew*) (RRA); 1 ♀ (lectotype), Middlesex, near London, Southgate (BMNH).

HOST. *Dasineura glechomae* (Kieffer).

Aprostocetus (Aprostocetus) rhacius (Walker)

(Fig. 327)

? *Cirrospilus Mazaeus* Walker, 1839*a*: 302. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 53) [examined].
Cirrospilus Rhacius Walker, 1839*c*: 181. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 53) [examined].
[*Aprostocetus dotus* (Walker) Graham, 1961*b*: 53, in part. Misidentification.]

I previously (Graham, 1961*b*: 53) synonymized *Cirrospilus mazaeus* with *Aprostocetus dotus* (Walker). The lectotype ♂ of *mazaeus* may be conspecific with *A. rhacius* (Walker), but as males of this group are often difficult to place it is preferable to use the name *rhacius*, based upon a ♀ lectotype, for the present species.

Cirrospilus rhacius was incorrectly synonymized with *Aprostocetus dotus* (Walker) by me (Graham, 1961*b*: 53). I now regard it as representing a valid species.

♀. Differs from ♀ of *aega* mainly in the characters given in the key to females, couplet 121. Antenna (Fig. 327) with scape about 3·6 times as long as broad, reaching level of top of median ocellus; pedicellus plus flagellum 1·25–1·30 times breadth of mesoscutum; pedicellus about twice as long as broad, slightly shorter than F1; funicle filiform, slightly stouter than pedicellus, its segments decreasing very slightly in length, F1 2·0–2·4 times, F2 1·85–2·00 times, F3 1·65–1·87 times as long as broad; clava somewhat broader than F3, nearly or just as long as F2 plus F3, 2·3–3·0 times as long as broad, with C1 hardly longer than broad, C2 and C3 progressively shorter, spine about 0·6 length of C3, with apical seta 0·4 length of spine; sensilla moderately numerous. Spur of mid tibia about 0·7 length of basitarsus. Forewing with *M* 3·8–4·0 times length of *ST*. Gaster long-ovate or sublanceolate, somewhat longer than head plus thorax, slightly broader than thorax, 2·1–2·2 times as long as broad, slightly acuminate; last tergite about as long as broad; ovipositor sheaths plus postcercale 0·37–0·42 length of hind tibia.

Body greenish to bluish with mouth-edge sometimes narrowly yellowish, also upper angle of mesopleuron and sides or whole of dorsellum. Antennal scape and pedicellus black, flagellum brownish. Coxae and about proximal two-thirds of all femora coloured like the body; legs otherwise yellow with fore tarsi brown, fourth segment of mid and hind tarsi fuscous, third brownish. Tegulae yellow with posterior edge brown. Wings hyaline, venation yellowish. Length 1·5–1·8 mm.

♂. Antenna with scape virtually as long as eye, 3·10–3·15 times as long as broad, reaching slightly above vertex, with ventral plaque 0·29–0·30 length of scape and placed wholly below the middle; pedicellus plus flagellum 2·0–2·1 times breadth of mesoscutum; pedicellus 1·60–1·75 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 hardly more than half as long as F2, quadrate, following segments subequal in length, each about twice as long as broad; clava somewhat longer than F3 plus F4, 4·0–5·0 times as long as broad; whorled satae long, those of F1 nearly reaching tip of F3.

MATERIAL EXAMINED

3 ♂, 4 ♀. **Great Britain**: 1 ♀, near London [Southgate], lectotype of *rhacius* (Walker) (BMNH). **Netherlands**: 3 ♂, 3 ♀, Wageningen, reared 1–6.viii.1971, from galls of *Dasineura trifolii* (F. Löw) (*H. J. Vlug*) (ITZ; MJG).

HOST. *Dasineura trifolii* (F. Löw).

Aprostocetus (Aprostocetus) scoticus sp. n.

♀. Antenna with scape about 0·85 length of eye, reaching median ocellus; pedicellus plus flagellum 1·15 times breadth of mesoscutum; pedicellus 1·8 times as long as broad, nearly as long as F1; funicle proximally a little stouter than pedicellus, thickening slightly distad, its segments decreasing slightly in length, F1 about twice, F3 about 1·5 times, as long as broad; clava slightly broader than F3 and 2·8 times as long as broad, with C1 as long as broad, C2 and C3 progressively shorter, spine about 0·5 length of C3, with apical seta slightly shorter than spine; sensilla not very numerous, uniseriate, similar in form to those of *amenon* (Fig. 334). Thorax 1·3 times as long as broad. Gaster long-ovate, distinctly longer than head plus thorax, 2·25 times as long as broad, strongly acute and slightly acuminate; ovipositor sheaths plus postcercale 0·33 length of hind tibia; tip of hypopygium at 0·5 length of gaster. Other characters as in *amenon*.

Body dark greenish blue; upper angle of mesopleuron yellowish. Coxae, proximal two-thirds of fore and mid femora and proximal three-quarters of hind femora, coloured like body; trochanters mainly fuscous; mid and hind tibiae black with bases and tips yellow; fore tarsi brown, mid and hind tarsi yellowish at base darkening gradually to tips. Tegulae brown, yellow anteriorly. Wings hyaline, venation testaceous. Length 1·25 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Great Britain**: Scotland, Argyllshire, Ardnamurchan, Achateny, reared 18.ix.1963 from *Jaapiella veronicae* on *Veronica* sp. (*R. R. Askew*) (RRA).

HOST. *Jaapiella veronicae* (Vallot).

COMMENT. *A. scoticus* differs from ♀ of *amenon* mainly in having shorter antennal clava, slightly shorter funicular segments, very slightly longer thorax and mainly black tibiae. It also has a different host.

Aprostocetus (Aprostocetus) salictorum sp. n.

(Figs 328, 478, 587)

♀. Differs from ♀ of *anodaphus* as follows. Antenna (Fig. 328) with scape 0·70–0·75 length of eye, hardly reaching median ocellus; F3 on average shorter, 1·5–1·8 times as long as broad. Submedian lines of scutellum slightly nearer to sublateral lines than to each other, enclosing a space hardly or just twice as long as broad. Gaster tending to be narrower with sides less curved; ovipositor sheaths plus postcercale 0·5–0·7 length of hind tibia.

Body with rather more distinct olive-green to bluish olive metallic tints; gaster sometimes bronze-olive; mouth-edge usually narrowly testaceous. Antennae with pedicellus testaceous at tip and often beneath, flagellum brownish testaceous to brown. Legs with distal part (up to half) of fore coxae sometimes yellow, fore tarsi gradually darkening from testaceous at base to fuscous at tips. Tegulae yellow or testaceous. Wings hyaline, venation yellowish to testaceous. Length 1·6–2·4 mm.

♂. Antenna (Fig. 478) with scape as long as eye, reaching slightly above vertex, about 3·5 times as long as broad, with ventral plaque 0·32–0·35 length of scape and placed wholly in lower half; pedicellus plus flagellum 2·05–2·20 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle filiform, slender, slightly stouter than pedicellus; F1 about half as long as F2 and subquadrate or very slightly longer than broad, following segments equal in length, F2 and F3 each 1·8–2·5 times as long as broad, F4 2·0–3·0 times; clava not broader than F4, 5–6 times as long as broad, with C1 and C2 equal in length, each about twice as long as broad, C3 much shorter, spine about 0·2 length of C3, with apical seta fully as long as spine; whorled setae long, those of F1 reaching about to middle of F3. Genitalia (Fig. 587).

MATERIAL EXAMINED

7 ♂, 17 ♀. Holotype ♀, **Netherlands**: Landbroek, 7.vii.1966, reared from *Rhabdophaga heterobia* on *Salix triandra* (=*amygdalina*) (*W. Nijveldt*) (ITZ).

Paratypes. **Czechoslovakia**: 6 ♀, Bohemia, Hradec Králové, v.1945, reared from cecidomyiid on *Salix* sp. (*Bouček*) (BMNH). **Netherlands**: 1 ♀, Landbroek, 12.v.1966, 1 ♀, 23.vi.1966, 1 ♂, 24.v.1966, 1 ♂, 1 ♀, 1.vi.1966, 1 ♂, 1 ♀, 4.vii.1966, 1 ♂, 1 ♀, 6.vii.1966, 1 ♂, 1 ♀, 12.vii.1966, 1 ♀, 20.ix.1966, 1 ♂, 2 ♀, v.1969, 1 ♀, ix.1970, all from *Rhabdophaga heterobia* on *Salix triandra* L. (*W. Nijveldt*) (ITZ; MJG), 2 ♂, 16.ix.1965 (*Landgoed*), 1 ♀, Sandenburg, 16.ix.1965, from same host (*Landgoed*) (MJG).

HOST. *Rhabdophaga heterobia* (F. Löw).

Aprostocetus (Aprostocetus) tanaceticola sp. n.

♀. Differs from ♀ of *salictorum* in the characters given in the key to females, couplet 115. Differs from ♀ of *anodaphus* in having antennal scape distinctly shorter than eye (0·70–0·75 length of eye); median line of mesoscutum tending to be weaker, sometimes hardly visible; cilia of apical margin of forewing very short, only 0·12–0·17 length of *ST*; ovipositor sheaths on average projecting less far, their length 0·2–0·3 length of hind tibia; ovipositor sheaths plus postcercale 0·47–0·60 length of hind tibia.

♂. Unknown.

MATERIAL EXAMINED

5 ♀. Holotype ♀, **Netherlands**: Herpen, 5.ix.1962, reared from *Rhopalomyia tanaceticola* (*S. van Heijnsbergen*) (ITZ).

Paratypes. **Netherlands**: 1 ♀, same data as holotype; 1 ♀, Wessum, 5.vii.1972, 1 ♀, 6–24.ix.1971, from *R. tanaceticola* (*H. J. Vlug*) (ITZ); 1 ♀, Denekamp, from cecidomyiid on *Tanacetum* (no other data) (MJG).

HOST. *Rhopalomyia tanaceticola* (Karsch) on *Tanacetum*.

Aprostocetus (Aprostocetus) minimus (Ratzeburg) **comb. n.**

(Figs 336, 474, 589)

Geniocerus minimus Ratzeburg, 1848: 175. Syntypes ♂, ♀, GERMANY (destroyed). NEOTYPE ♀, NETHERLANDS: Vogelensang, 10.vi.1966, reared from *Rhabdophaga rosaria* (*W. Nijveldt*) (ITZ), here designated [examined].

Tetrastichus minimus (Ratzeburg) Dalla Torre, 1898: 18; Marchal, 1900: 104; Domenichini, 1966*a*: 157; 1966*b*: 40.

The original material of *Geniocerus minimus* is not present amongst the remnants of the Ratzeburg collection (NM) and was presumably destroyed by military action in 1945.

Ratzeburg (1848: 175) stated that *minimus* had been reared from 'Cecidomyia salicina'. Domenichini (1966*b*: 40) interpreted this host as being *Rhabdophaga salicis* Schrank. It is difficult to be sure from Ratzeburg's several references in *Die Ichneumonen der Forstinsecten* (1848) what he actually meant by 'salicina'. However, in volume 3 of his work *Die Forstinsecten* (1852: 157) he remarked 'Andre drehen die jungen Blättchen an den Zweigspitzen zusammen, z. B. die von Bouché an jungen Birnbaümen und Weiden neuerlich entdeckten [*Tipula (Cecidomyia) Pyri* und *salicina*]'. This makes it clear that by *salicina* he meant the species now known as *Rhabdophaga rosaria* (H. Löw). The neotype here designated has thus been reared from the host originally recorded by Ratzeburg.

♀. Head (somewhat collapsed) about as broad as mesocutum, slightly more than twice as broad as long; POL about 1·5 OOL, OOL about 1·5 OD. Eyes 1·4 times as long as broad, separated by slightly more than their length. Malar space 0·55 length of eye, sulcus slightly curved. Mouth about 1·25 malar space. Setae of vertex very fine and short. Antenna (Fig. 336) with scape somewhat shorter than eye, hardly reaching median ocellus, about 3 times as long as broad; pedicellus plus flagellum 1·10–1·20 times breadth of mesoscutum; pedicellus slightly less than twice as long as broad, as long as or slightly shorter than F1; funicle proximally as stout as or hardly stouter than pedicellus, thickening very slightly distad, its segments decreasing very slightly in length or subequal, F1 1·7–2·0 times, F2 1·3–1·6 times, F3 1·1–1·5 times as long as broad; clava hardly or a little broader than F3, as long as F3 plus F2 plus one-third to two-thirds of F1, 2·5–2·8 times as long as broad, pointed, with C1 about as long as broad, C2 hardly shorter, C3 much shorter, spine about 0·33 length of C3, with apical seta slightly shorter than spine; sensilla rather sparse, uniseriate, moderately long, slender, subdecumbent with tips projecting slightly; setae of flagellum short, straight or nearly so. Thorax hardly 1·5 times as long as broad; propodeal slope 45°–50°. Pronotum very short. Mid lobe of mesoscutum about as broad as long, moderately convex and moderately shiny, with extremely fine, superficial reticulation having most areoles about 3 times as long as broad; median line very fine but moderately distinct; 3 (–4) adnotaular setae on each side. Scutellum 1·2–1·3 times as broad as long, moderately convex, sculpture much finer than that of mesoscutum and delicately engraved; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·2 times as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair in or slightly behind middle. Dorsellum 2·5–3·0 times as broad as long, hind edge curved. Propodeum broadly and quite deeply emarginate, medially 0·50–0·66 length of dorsellum, moderately shiny, with very fine superficial reticulation; median carina extremely short, raised, hardly expanded posteriorly; spiracles rather small, oval, close to metanotum. Legs of medium length and thickness; hind coxae oblique, slightly more than twice as long as broad, shiny; hind femora slightly more than 3 times as long as broad; spur of mid tibia about 0·75 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about 2·3 times as long as broad; costal cell distinctly shorter than *M*, about 12 times as long as broad, lower surface with a row of setae; *SM* with 3–4 dorsal setae; *M* relatively thin, 2·8–4·1 times length of *ST*, its front edge with 10–11 setae; *ST* straight or hardly curved, at 45°–50°, very thin at base but gradually expanding to form a small subrhomboidal stigma; *PM* very short or rudimentary; speculum very narrow but extending as a very narrow strip below *M* for about half its length; wing beyond it moderately thickly pilose; cilia 0·30–0·45 length of *ST*. Hindwing subobtuse; cilia about 0·4 breadth of wing. Gaster lanceolate, 1·25–1·70 times as long as head plus thorax, as broad as or distinctly narrower than thorax, acuminate; last tergite about 1·5 times as long as broad; ovipositor sheaths plus postcercale 0·60–0·62 length of hind tibia, sheaths as long as or slightly shorter than postcercale; longest seta of each cercus virtually twice length of next longest, slightly kinked; tip of hypopygium at about 0·5 length of gaster.

Body black; head and thorax with a weak to moderately distinct bluish to greenish metallic tint; gaster with weaker tint, discally tending towards bronze; upper angle of mesopleuron yellowish testaceous; dorsellum sometimes with a yellowish spot on each side; mouth-edge sometimes narrowly testaceous. Antennal scape and pedicellus black, the latter usually testaceous apically; flagellum brownish testaceous to brown. Coxae, and femora mainly, coloured like body; trochanters brownish, trochantelli yellowish; tips of femora broadly pale testaceous; legs otherwise pale yellowish testaceous with mid and hind tibiae narrowly to broadly infuscate medially; fore tarsi brownish, mid and hind tarsi with third segment brownish, fourth fuscous. Tegulae yellowish with hind edge darker. Wings subhyaline, venation yellowish testaceous. Length 1·2–1·4 mm.

♂. Antenna (Fig. 474) with scape as long as eye but hardly reaching vertex, 2·7–2·8 times as long as broad, with ventral plaque 0·35–0·41 length of scape; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, slightly longer than F1; funicle slightly stouter than pedicellus, filiform; F1 slightly more than half as long as F2, quadrate, following segments subequal in length, each 1·7–2·2 times as long as broad; clava not broader than funicle, 4·5–5·8 times as long as broad, with C1 and C2 subequal in length (or C2 a little longer), each nearly or about twice as long as broad, C3 much shorter, spine about 0·4 length of C3; whorled setae moderately long, those of F1 reaching somewhat beyond tip of F2. Genitalia (Fig. 589).

Colour as in ♀.

MATERIAL EXAMINED

8 ♂, 7 ♀. **Netherlands**: 1 ♀ (neotype), Vogelenzang, 10.vi.1966 (*W. Nijveldt*) (ITZ).

Netherlands: 2 ♂, 1 ♀, same data as neotype; 5 ♂, Bloemendaal, 28.iii.1961, 1 ♀, 29.iii.1961, 1 ♀, 31.iii.1961; 1 ♂, 1 ♀, Zandvoort, 27.iii.1956, 1 ♀, 18.iv.1956, 1 ♀, 20.v.1956, all from *Rhabdophaga rosaria* (*Gijswijt*) (MJG).

HOST. *Rhabdophaga rosaria* (H. Löw) on *Salix*.

Aprostocetus (Aprostocetus) torquentis sp. n.

♀. Gaster 1·60–1·75 times as long as thorax, 1·9–2·3 times as long as broad, slightly broader than thorax; last tergite as long as or hardly longer than broad; ovipositor sheaths plus postcercale 0·33–0·40 length of hind tibia. Antennal clava 2·5–2·7 times as long as broad. Propodeum medially 0·60–0·73 length of dorsellum. Forewing reaching slightly beyond tips of ovipositor sheaths, 2·10–2·27 times as long as broad. Other structural features as in *salictorum*.

Head and thorax moderately bright green to blue; gaster greenish to bronze. Antennal flagellum testaceous to brownish. Coxae (except tip of fore coxae in one specimen) and about proximal half of fore and mid femora and proximal two-thirds of hind femora, coloured like body; legs otherwise yellow with fore tarsi brown, fourth segment of mid and hind tarsi fuscous, third segment slightly brownish. Tegulae yellow, hind edge sometimes brownish. Wings hyaline, venation yellowish. Length 1·3–1·5 mm.

♂. Antenna with scape hardly longer than eye but reaching slightly above vertex, 3·3 times as long as broad, with ventral plaque 0·2 length of scape; pedicellus plus flagellum 1·9 times breadth of mesoscutum; pedicellus about 1·6 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 subquadrate, F2 1·9 times, F4 twice as long as broad; clava slightly longer than F3 plus F4, about 4·5 times as long as broad; whorled setae long, those of F1 reaching about to tip of F3.

Colour as ♀ but tegulae fuscous.

MATERIAL EXAMINED

1 ♂, 3 ♀. Holotype ♀, **Netherlands**: Boskoop, viii.1971, from *Rhabdophaga marginemtorquens* on *Salix viminalis* (*H. J. Vlug*) (ITZ).

Paratypes. 1 ♂, 2 ♀, same data as holotype (MJG).

HOST. *Rhabdophaga marginemtorquens* (Bremi).

Aprostocetus (Aprostocetus) amenon (Walker) comb. rev.

(Figs 334, 473, 593)

Cirrospilus Amenon Walker, 1839*a*: 315. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961b: 53) [examined].

[*Aprostocetus dotus* (Walker) Graham, 1961b: 53, in part. Misidentification.]

[*Tetrastichus dotus* (Walker) Domenichini, 1966*a*: 152; 1966*b*: 28, in part. Misidentification.]

Earlier (Graham, 1961*b*: 53) I placed *amenon*, represented by a ♀ lectotype, in synonymy with *dotus* (Walker) of which the lectotype is a ♂. Further research has shown that the two are not conspecific. The valid name for the present species is *amenon* (Walker). In the same paper I also cited *mazaeus* (Walker), *menius* (Walker) and *beroe* (Walker) as synonyms of *dotus*. None of these is conspecific with *amenon*; their identity is discussed, as far as possible, under other species.

♀. Head hardly or just as broad as mesoscutum, 2·3–2·4 times as broad as long; POL about 1·4 OOL, OOL about twice OD. Eyes 1·25 times as long as broad. Malar space 0·55 length of eye, sulcus slightly curved. Mouth about 1·3 malar space. Antenna (Fig. 334) with scape 0·85 length of eye, reaching level of vertex; pedicellus plus flagellum 1·15–1·30 times breadth of mesoscutum; pedicellus 2·1–2·3 times as long as broad, nearly or just as long as F1; funicle proximally hardly or only very slightly stouter than pedicellus, thickening at most very slightly distad, its segments subequal or decreasing a little in length, F1 2·1–2·6 times, F2 2·0–2·3 times, F3 1·8–2·1 times as long as broad; clava slightly broader than F3, as long as or slightly longer than F2 plus F3, 3·2–3·7 times as long as broad, acute, with C1 about 1·5 times as long as broad, C2 and C3 progressively shorter, spine 0·6 length of C3, with apical seta slightly shorter than spine; sensilla fairly numerous, uniseriate, moderately long, most with rather long bases and about equally long projecting blades. Thorax 1·05–1·20 times as long as broad; propodeal slope 60°–70°. Pronotum short. Mid lobe of mesoscutum slightly broader than long, moderately convex, moderately shiny, with extremely fine, superficial reticulation having areoles 2–3 times as long as broad; median line very fine but usually traceable in some lights; 3–6 adnotaular setae on each side. Scutellum 1·4–1·6 times as broad as long, rather strongly convex, slightly more finely sculptured than mesoscutum, with shorter areoles; submedian lines nearer to sublateral lines than to each other, enclosing a space 1·8–2·1 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair in middle. Dorsellum 3·2–4·0 times as broad as long, hind edge curved or slightly angulate. Propodeum broadly and deeply emarginate, medially only 0·50–0·65 as long as dorsellum, with superficial or hardly raised reticulation; median carina extremely short or virtually absent, the ridge bordering the petiolar foramen nearly or just touching the hind margin of dorsellum; spiracles as in *minimus*. Legs of medium length and thickness; hind coxae oblique, about twice as long as broad, with extremely fine engraved reticulation; hind femora 3·6–4·0 times as long as broad; spur of mid tibia 0·66 length of basitarsus; fourth tarsomere slightly shorter than basitarsus. Forewing 2·05–2·25 times as long as broad; costal cell distinctly shorter than *M*, 11–14 times as long as broad, the row of setae on its lower surface sometimes more or less widely broken medially; *SM* with 3–4 dorsal setae; *M* rather thin, 3·8–4·5 times length of *ST*, its front edge with 10–13 setae; *ST* at about 50°, thin proximally but expanding from middle to form a small stigma; *PM* rudimentary or a short stub; speculum small, not extending below *M*; wing beyond it quite thickly pilose; cilia 0·33–0·45 length of *ST*. Hindwing distinctly though not strongly pointed; cilia 0·35–0·40 breadth of wing. Gaster ovate-lanceolate, 1·4–1·6 times as long as head plus thorax, about as broad as thorax, 2·0–2·8 times as long as broad, acuminate; last tergite as long as or slightly longer than broad; ovipositor sheaths plus postcercale 0·30–0·33 length of hind tibia, sheaths somewhat shorter than postcercale; longest seta of each cercus about twice length of next longest, slightly kinked; tip of hypopygium at about 0·5 length of gaster.

Body with distinct though not very strong metallic tints which vary from bronze-green through green to blue-green; upper angle of mesopleuron yellowish, sometimes also sides or whole of dorsellum; mouth-edge sometimes testaceous. Occasionally the face, genae, sides of vertex and prepectus are yellowish, the sides of mid lobe of mesoscutum and of scapulae reddish yellow; but such specimens may be teneral. Antennal scape blackish, sometimes pale distally; pedicellus brown to fuscous, often testaceous beneath and at tip; flagellum testaceous to dark brown. Coxae coloured like body, or with fore coxae partly to wholly yellow, mid and hind coxae sometimes yellow apically; legs otherwise yellow with femora usually infuscate at least proximally, sometimes their proximal half to two-thirds black; fore tarsi brownish, mid and hind tarsi with fourth segment and pretarsus brown to fuscous, third segment sometimes slightly brownish. Tegulae yellow, sometimes brownish posteriorly. Wings hyaline, venation yellowish to testaceous. Length 1·30–1·65 mm.

♂. Antenna (Fig. 473) with scape 0·85 length of eye, reaching slightly above vertex, 3·1–3·6 times as long as broad, with ventral plaque 0·22–0·30 length of scape; pedicellus plus flagellum 1·9–2·1 times breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, about as long as F1; funicle proximally not stouter than pedicellus, tending to taper very slightly distad; F1 shorter than F2, 1·5–1·7 times as long as broad, following segments subequal in length, each 2·2–2·5 times as long as broad; clava not broader than F4, as long as or very slightly longer than F3 plus F4, 5·5–7·0 times as long as broad, C1 and C2 each 2·0–2·2 times as long as broad, C3 much shorter; whorled setae long, those of F1 reaching to tip of F3. Genitalia (Fig. 593).

MATERIAL EXAMINED

5 ♂, 17 ♀. **Great Britain, Italy, Netherlands**.

HOST. *Dasineura ulmaria* (Bremi).

***Aprostocetus (Aprostocetus) veronicae* sp. n.**

(Fig. 335)

Extremely close to ♀ of *amenon* and differs only in having the antennal clava (Fig. 335) longer, 3·8–4·7 times as long as broad; spur of mid tibia only 0·53 length of basitarsus; gaster 3·00–3·75 times as long as brod, with ovipositor sheaths plus postcercale 0·45–0·60 length of hind tibia. Propodeum medially 0·6–0·8 length of dorsellum.

♂. Unknown.

MATERIAL EXAMINED

4 ♀. Holotype ♀, **Great Britain**: England, Surrey, Mickleham Downs, 25.viii.1927, reared from *Jaapiella veronicae* (Vallot) (*M. Niblett*) (BMNH).

Paratypes. **Great Britain**: 3 ♀, same data as holotype (BMNH).

HOST. *Jaapiella veronicae* (Vallot) on *Veronica chamaedrys*.

Aprostocetus (Aprostocetus) cecidomyiarum (Bouché) **comb. n.**

(Figs 337, 338, 479, 591)

Eulophus cecidomyiarum Bouché, 1834: 173. Syntypes, GERMANY (presumed lost). NEOTYPE ♀, FRANCE: unlocalized (*J. Giraud*) (MNHN), here designated [examined].

Tetrastichus cecidomyiarum (Bouché) Laboulbène, 1877: 433; Domenichini, 1966*a*: 155; 1966*b*: 23, in part (excluding synonym).

Domenichini (1966*a*: 155) synonymized *Geniocerus artemisiae* Erdös, 1954 with *cecidomyiarum*, including in his concept of the latter the material reared by Giraud and recorded as *cecidomyiarum* by Laboulbène (1977) as well as the original material of *artemisiae* Erdös. I have examined all this material and consider that the two represent closely allied but distinct species.

Enquiries regarding the original material of *cecidomyiarum* in Bouché's collection (MNHU) indicate that it no longer exists. Therefore I checked the material reared by Giraud, considered as first reviser. The Giraud collection (MNHN) contains several reared specimens standing as *cecidomyiarum* Bouché. One pith block, which carries a ♂ and a ♀, bears a greenish ticket but no other label; the ♀ is here designated neotype of *Eulophus cecidomyiarum* Bouché. Next to it stands a pin bearing a swollen flower-head of *Artemisia*, with a label 'galle Cecid. artemisiae Bouché'. This accords with the data given by Bouché (1834: 173) for cecidomyiarum: 'Sie lebt in den Larven der Cecidomyia Artemisiae m.' [=*Boucheella artemisiae* (Bouché)].

♀. Close to ♀ of *amenon* but easily distinguished by its shorter and broader antennal clava (Fig. 338) and much shorter gaster (Fig. 337). Malar space 0·65 length of eye. Antenna (Fig. 338) with funicular segments relatively shorter, F1 1·6–2·2 times, F2 1·5–1·9 times, F3 1·3–1·6 times as long as broad; clava 2·2–2·6 times as long as broad. Thorax 1·30–1·35 times as long as broad. Setae of scutellum equal, their length 0·75–0·80 distance between submedian lines. Spur of mid tibia 0·80–0·85 length of basitarsus. Gaster (Fig. 337) ovate to long-ovate, hardly or only very slightly longer than head plus thorax, 1·4–1·8 times as long as broad; last tergite at least very slightly broader than long; tips of longest cercal setae reach level with or slightly beyond tips of ovipositor sheaths, the latter hardly projecting; sheaths plus postcercale 0·19–0·25 length of hind tibia.

Colour as in *amenon*. Length 1·0–1·6 mm.

♂. Antenna (Fig. 479) with scape about 1·1 times length of eye, reaching slightly above vertex, 3·2–3·7 times as long as broad, with ventral plaque 0·32–0·35 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus about 1·5 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2 and quadrate, following segments subequal in length, each about twice as long as broad; clava hardly broader than F4, hardly longer than F3 plus F4, nearly 4·5 times as long as broad, with C1 and C2 each about 1·6 times as long as broad, C3 much shorter; whorled setae moderately long, those of F1 reaching to about half-way along F3. Gentialia (Fig. 591).

MATERIAL EXAMINED

4 ♂, 6 ♀. **France**: 1 ♀ (neotype), unlocalized (*Giraud*) (MNHN), the right-hand specimen pinned to a pith block [the left-hand specimen is a ♂], with a small square greenish ticket below, also labelled 'Eulophus cecidomyiarum Bouché. Neotype ♀. M. de V. G[raham] det.'. The other specimens are pinned

in pairs to four pith blocks, each bearing a greenish ticket; one pair has two labels reading 'de Cecidom tubifex. 12 mai' and 'artem[isia] camp [estris] [word illegible]'.

Hosts. *Boucheella artemisiae* (Bouché) and *Misospatha tubifex* (Bouché) on *Artemisia* spp.

Aprostocetus (Aprostocetus) artemisiae (Erdös)

(Figs 340, 480, 590)

Geniocerus artemisiae Erdös, 1954: 359. LECTOTYPE ♀, Hungary: Sukoró (*Erdös*) (TM), here designated [examined].
Aprostocetus artemisiae (Erdös) Graham, 1961*b*: 54.
[*Tetrastichus cecidomyiarum* (Bouché) Domenichini, 1966*a*: 155; 1966*b*: 23, in part. Misidentification.]

I have examined 34 syntypes of *Geniocerus artemisiae.* The lectotype ♀ is labelled 'Sukoró 1951.vii.27 dr. Erdös; e gallis goss. Artemisiae austriacae Jacq.; cotypus; Geniocerus artemisiae Erd. det. Erdös'.

♀. Differs from ♀ of *cecidomyiarum* in having the gaster (Fig. 340) longer, 2·0–2·9 times as long as broad, distinctly longer than head plus thorax, more acute and acuminate; last tergite usually as long as or a little longer than broad; ovipositor sheaths plus postcercale 0·3–0·5 length of hind tibia; tips of longest cercal setae not reaching level with tips of ovipositor sheaths, which project more distinctly. Antenna with flagellum slightly less clavate than in *cecidomyiarum*; clava on average longer, 2·5–2·9 times as long as broad.

♂. Antenna (Fig. 480) with scape 2·9–3·0 times as long as broad, reaching slightly above vertex, with ventral plaque about 0·3 length of scape; pedicellus plus flagellum 1·6–1·8 times breadth of mesoscutum; pedicellus about 1·5 times as long as broad, hardly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 0·5–0·65 as long as F2, quadrate; following segments subequal in length, each 2·0–2·3 times as long as broad; clava about as long as F3 plus F4, 4–5 times as long as broad; whorled setae moderately long, those of F1 reaching about half-way along F3. Genitalia (Fig. 590).

Material examined
6 ♂, 35 ♀. **Great Britain**, **Hungary**.

Host. *Rhopalomyia* sp. in cottony galls on *Artemisia austriaca* according to Erdös (1954).

Aprostocetus (Aprostocetus) microscopicus (Rondani) **comb. n.**

(Fig. 341)

Myiomisa microscopica Rondani, 1877: 189. Lectotype ♀, Italy: (Museo La Specola, Florence), designated by Bouček (1974: 257) [examined].
Tetrastichus microscopicus (Rondani) Bouček, 1974: 257.

This species was misidentified by Szelényi (1941: 94) and following him, by Graham (1961*b*: 42) and Domenichini (1966*a*: 101; 1966*b*: 40). Bouček (1974) examined all Rondani's material (which he kindly let me see at the same time) and designated a lectotype which he recognized as belonging to the species-group of *caudatus*. When redescribing *microscopicus* (Bouček, 1974: 258–260) he compared it particularly with the species supposed at that time to be *dotus* (Walker). His redescription is still valid but the species referred to as '*dotus*' was really *amenon* (Walker).

It should be possible to identify both sexes of *microscopicus* from the characters given in the key to females and in Bouček (1974).

Material examined
2 ♂, 5 ♀ (lectotype, paralectotypes). **Italy**. Records from other countries given by Domenichini (1966*a*; 1966*b*) are incorrect.

Host. *Cystiphora sonchi* (Bremi) on *Sonchus* sp. (Rondani, 1877). Records of other hosts cited by Domenichini (1966*a*; 1966*b*) do not apply to *microscopicus*.

Aprostocetus (Aprostocetus) eleuchia (Walker)

Cirrospilus Eleuchia Walker, 1839*a*: 301. Lectotype ♂, Great Britain: near London (BMNH), designated by Graham (1961*b*: 54) [examined].
Aprostocetus eleuchia (Walker) Graham, 1961*b*: 54.
? *Tetrastichus eleuchia* (Walker) Domenichini, 1966*b*: 29.

Walker described only the male of *eleuchia*, which is represented in BMNH by a single specimen, the lectotype [possibly holotype]. It is included in the key to males from a study of the characters of the lectotype, which is in rather poor condition. I have not seen the material from France which Domenichini (1966*b*) referred to *eleuchia* and am unable to determine what species he had before him, since he included as a synonym of *eleuchia* another species, *euagoras* Walker, which was also described from the male only. I now regard these two as distinct species (see key to males) although in 1961 I thought that they might be conspecific.

♂. Antenna with scape about 2·8 times as long as broad, about as long as an eye, not reaching above vertex, with ventral plaque 0·32 length of scape and situated wholly in the lower half; pedicellus plus flagellum 2·25 times breadth of mesoscutum; pedicellus 1·8 times as long as broad, somewhat longer than F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad; F1 much shorter than F2, slightly longer than broad, following segments subequal in length, F2 2·3 times, F3 2·4 times, F4 2·5 times as long as broad; clava hardly broader than F4, about 4·7 times as long as broad, with C1 and C2 each nearly twice as long as broad, C3 much shorter; whorled setae moderately long, those of F1 reaching about level with tip of F3.

Body olivaceous; all tibiae broadly infuscate medially; wings hyaline, venation greyish testaceous. Length 0·92 mm.

♀. Doubtfully associated (see couplet 120 of key to females).

MATERIAL EXAMINED
1 ♂ (lectotype). **Great Britain**: England, near London (*F. Walker*).

HOST. Needs confirmation. Domenichini (1966*b*) recorded it as a parasite of *Cystiphora sonchi* F. Löw but I have not seen his material.

Aprostocetus (Aprostocetus) beroe (Walker)

Cirrospilus Beroe Walker, 1839*c*: 181. Lectotype ♀, Great Britain: near London (*Walker*) (BMNH), designated by Graham (1961*b*: 53) [examined].

Cirrospilus beroe was synonymized with *Aprostocetus dotus* (Walker) (Graham, 1961*b*: 53) but I now consider it to represent a valid species. Only the lectotype is known and the characters which appear to be diagnostic are given in the key to females, couplet 111.

♀. Very like ♀ of *amenon* but antennal clava relatively shorter, 2·9 times as long as broad; F1 only 1·9 times as long as broad; thorax about 1·4 times as long as broad. Propodeum medially 0·75 length of dorsellum. Gaster 2·6 times as long as broad, strongly acute and acuminate; ovipositor sheaths plus postcercale 0·47 length of hind tibia; sheaths 0·3 length of postcercale. Also much resembles *veronicae* but has a relatively shorter gaster.

♂. Unknown.

MATERIAL EXAMINED
1 ♀ (lectotype). **Great Britain** (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) atticus sp. n.

(Figs 342, 476, 599)

♀. Differs from ♀ of *cecidomyiarum* as follows. Antenna (Fig. 342) with anelli shorter and less conspicuous, C2 and C3 slightly shorter relative to C1, C3 more pointed with its spine slightly longer.

Propodeum less transverse, less deeply emarginate and not or hardly shorter than dorsellum. Gaster about twice as long as broad.

The following parts of body yellow: most of face, genae and sometimes of vertex, upper angle of mesopleuron, a spot on each side of pronotum, another on outer part of each scapula, scutellum posteriorly; base of gaster slightly yellowish. Fore coxae black at base, mid and hind coxae black; fore and mid femora blackish over proximal third, hind femora over proximal half; fore tarsi brown, also third and fourth segments of mid and hind tarsi; legs otherwise yellow. Length 0·9–1·3 mm.

♂. Antenna (Fig. 476) with scape as long as eye, reaching distinctly above vertex, 3·4 times as long as broad, with ventral plaque 0·20–0·27 length of scape; pedicellus plus flagellum about 1·7 times breadth of mesoscutum; pedicellus 1·7 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 slightly more than half as long as F2, subquadrate, following segments subequal in length, each 2·0–2·2 times as long as broad; clava about 4·5 times as long as broad, about as long as F3 plus F4, with C1 and C2 each nearly twice as long as broad; whorled setae moderately long, those of F1 reaching about level with middle of F3. Genitalia (Fig. 599).

Body dark with only marks on the face and frons, upper angle of mesopleuron, and dorsellum, yellow (some specimens are more extensively pale, but are clearly teneral).

MATERIAL EXAMINED

7 ♂, 2 ♀. Holotype ♀, **Greece**: southern, 1973, reared from ? *Cystiphora* sp. on *Chondrilla* (*Aeschlimann*) (BMNH).

Paratypes. 7 ♂, 1 ♀, same data as holotype (BMNH).

HOST. Possibly *Cystiphora* sp.

Aprostocetus (Aprostocetus) lacaena (Walker)

Cirrospilus Lacaena Walker, 1839*a*: 302. LECTOTYPE ♂, GREAT BRITAIN: near London (BMNH), here designated [examined].

Aprostocetus lacaena (Walker) Graham, 1961*b*: 54.

The ♂ specimen here designated lectotype bears a circular label '38.4.5.363' and a Waterhouse label. The other two syntypes, labelled paralectotypes, may be conspefic.

♀. Unknown.

♂. The characters noted in couplet 37 of the key to species (males) are drawn from the lectotype.

MATERIAL EXAMINED

3 ♂ (lectotype, paralectotypes). **Great Britain** (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) nymphis (Walker)

Cirrospilus Nymphis Walker, 1839*a*: 299. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 54) [examined].

♀. Unknown.

♂. The characters used to distinguish this sex in the key to species (males: couplet 27) are taken from the lectotype.

MATERIAL EXAMINED

1 ♂ (lectotype). **Great Britain** (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) oropus (Walker)

Cirrospilus Oropus Walker, 1839*a*: 305. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 54) [examined].
Aprostocetus oropus (Walker) Graham, 1961*b*: 54.

♀. Unknown.

♂. Characters for distinguishing this sex in couplet 28 of the key to species (males) are drawn from the lectotype.

MATERIAL EXAMINED
1 ♂ (lectotype). **Great Britain** (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) euagoras (Walker)

Cirrospilus Euagoras Walker, 1839: 179. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 54) [examined].
Aprostocetus euagoras (Walker) Graham, 1961*b*: 54.
[*Tetrastichus eleuchia* (Walker) Domenichini, 1966*a*: 159, in part. Misidentification.]

♀. Unknown.

♂. The characters used to distinguish this sex in couplet 37 of the key to species (males) are drawn from the lectotype.

MATERIAL EXAMINED
1 ♂ (lectotype). **Great Britain** (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) eupolis (Walker)

Cirrospilus Eupolis Walker, 1839*a*: 302. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 54) [examined].

♀. Unknown.

♂. The characters used to distinguish this sex in couplet 22 of the key to species (males) are drawn from the lectotype.

MATERIAL EXAMINED
1 ♂ (lectotype). **Great Britain** (BMNH).

HOST. Unknown.

The *phillyreae*-group

Characters of the *lyciadas*-group, except as follows. Antenna of ♂ (Fig. 454) with scape strongly swollen and reaching far above vertex, its ventral plaque extending most of its length; pedicellus thickly setose; flagellum without compact whorls of long dark setae. Antenna of ♀ (Fig. 343) with scape reaching well above vertex; pedicellus thickly setose as in ♂. Both sexes with a long pale seta on each side of face, near middle of malar sulcus. Mid lobe of mesoscutum not very shiny, its reticulation coarser than in *lycidas*-group species and very slightly raised.

The species is a parasite of leaf-mining Lepidoptera.

Aprostocetus (Aprostocetus) phillyreae (Domenichini) **comb. n.**

(Figs 343, 454, 601, 712)

Tetrastichus phillyreae Domenichini, 1966*a*: 161; 1966*b*: 44. Holotype ♀, FRANCE: Massif d'Estérel (MHN) [examined].

♀. Head slightly broader than mesoscutum, 2·1–2·2 times as broad as long; temples 0·20–0·25 length of eyes, rounded; POL 0·90–1·05 OOL, about 3 times OD. Eyes about 1·1 times as long as broad, separated by about 1·5 times their length, with front edge strongly curved, hind edge nearly straight in the middle, with extremely short pubescence. Malar space 0·6–0·7 length of eye, sulcus straight. Mouth hardly greater than malar space. Genae with some long white setae, of which the longest is nearly half as long as malar space and is placed a little mesad of the malar sulcus and at about the middle of its length. Head dull, with excessively fine engraved reticulation; setae pale and weak, those of vertex hardly as long as OD. Antenna (Fig. 343) with scape about 1·15 times as long as eye, reaching a little above vertex; pedicellus plus flagellum 1·25–1·30 times breadth of mesoscutum; pedicellus 2·8–3·0 times as long as broad, at least very slightly longer than F1, very setose; anelli (Fig. 712); funicle proximally not or hardly stouter than pedicellus, thickening distinctly distad; funicular segments decreasing slightly in length, F1 2·7–3·0 times, F2 1·6–2·0 times, F3 1·25–1·50 times as long as broad; clava slightly broader than F3, about twice as long as broad, slightly shorter than F2 plus F3, pointed, its segments subequal in length and slightly transverse, spine about 0·3 length of C3, with apical seta longer than spine; sensilla uniseriate, not very numerous, rather short, decumbent with shortly projecting tips. Thorax about 1·4 times as long as broad; propodeal slope 45°–50°. Pronotum crescentic, about 0·25 length of mesoscutum. Mid lobe of mesoscutum slightly broader than long, moderately convex, rather dull, with rather coarse and very slightly raised reticulation having areoles at most twice as long as broad; median line absent; 4–5 adnotaular setae on each side. Scapular flanges rather broad, subtriangular. Scutellum 1·3–1·5 times as broad as long, fairly strongly convex, rather dull, with very fine, superficial reticulation having areoles slightly longer than those of mesoscutum; submedian lines equidistant from each other and from sublateral lines, enclosing a space 2·4–2·5 times as long as broad; setae equal, their length about equal to distance between submedian lines, anterior pair in or slightly before middle. Dorsellum 2·3–2·8 times as broad as long with hind edge obtusely angulate. Propodeum medially about as long as dorsellum, with posterior corners nearly right-angled, surface moderately shiny, with fine, hardly raised reticulation; median carina thin and sharp, hardly foveate at base; spiracles moderate-sized, oval, close to metanotum; callus with 2(–3) setae. Legs of medium length and thickness; hind coxae oblique, slightly more than twice as long as broad, shiny, with extremely fine and relatively weak reticulation, with hind edge moderately curved; hind femora about 3·7 times as long as broad; spur of mid tibia virtually as long as basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about 2·2 times as long as broad; costal cell distinctly shorter than *M*, about 12 times as long as broad, its lower surface with a row of setae; *SM* with 3–4 dorsal setae; *M* not thick, 4·1–5·3 times length of *ST*, its front edge with 11–14 setae; *ST* at about 50°, rather thin proximally but expanding beyond middle to form a moderate-sized stigma with distinct uncus; *PM* a short stub or rudimentary; speculum very small, not extending below *M*; wing beyond it moderately thickly pilose; cilia about 0·35 length of *ST*. Hindwing pointed or subacute; cilia about 0·33 breadth of wing. Gaster somewhat longer than head plus thorax, about as broad as thorax, 2·40–2·65 times as long as broad, strongly acute and usually slightly acuminate; last tergite as long as or a little longer than broad; ovipositor sheaths projecting somewhat; longest seta of each cercus 1·7–2·0 times length of next longest, slightly sinuate; tip of hypopygium at about 0·4 length of gaster.

Body non-metallic, ochreous-yellow with fuscous to black markings as follows: sometimes ocellar triangle and lower part of occipital surface more or less; a pair of spots at front edge of pronotal neck and a small spot just mesad of each pronotal spiracle; sometimes a spot on front part of each axilla; propodeum mainly or wholly, sometimes lateral parts of metanotum; usually the prosternum, sometimes mesosternum more or less; edge or whole of basal fovea of gaster, a spot at the side of each tergite; disc of tergites 6 and 7 more or less broadly, sometimes also tergite 5; gaster ventrally more or less infuscate, ovipositor sheaths black. Dorsal edges of antennal scape and pedicellus blackish; sutures, and often dorsal surface of flagellum infuscate, the whole flagellum sometimes brownish. Legs ochre-yellow; fore tarsi brownish, pretarsus of mid and hind tarsi brown; occasionally bases of mid and hind tarsi slightly infuscate, hind coxae occasionally partly infuscate. Tegulae yellow. Wings subhyaline or yellowish-tinged, venation yellow. Setae of head and thorax pale. Length 1·4–2·1 mm.

♂. Antenna (Fig. 454) with scape enormously swollen, much longer than eye and reaching far above vertex, only about twice as long as broad, with ventral plaque very narrow, placed in about middle of lower half, about 0·25 length of scape; pedicellus plus flagellum about 1·15 breadth of mesoscutum; pedicellus longer than F1, shaped much as in ♀ and very setose; funicle proximally not or slightly broader than pedicellus, filiform or tapering very slightly distad, its segments decreasing gradually in length or subequal, each 1·5–1·8 times as long as broad; clava hardly broader than F4, about twice as long as broad, slightly shorter than, or at most as long as, F3 plus F4; flagellum without whorled setae, but clothed with rather short curved setae. Gaster oval, as long as but slightly narrower than thorax, with ventral plica. Genitalia (Fig. 601).

Body ochreous yellow with following areas fuscous to blackish: small spot surrounding each pronotal spiracle; sometimes a pair on neck of pronotum; sometimes a spot on each axilla; prosternum; propodeum extensively or wholly; distal two-fifths to half of gaster (except part or whole of last tergite). Antennal scape slightly brownish dorsally; flagellum tending to be brownish distally.

MATERIAL EXAMINED

7 ♂, 11 ♀. **France**: 1 ♀, Bouches du Rhône, near Rognes, 24.vii.1974, 1 ♀, 27.vi.1977 (*Graham*) (BMNH); 1 ♀, Gard, Sanilhac, 20.vii.1977 (*Gijswijt*) (MJG); 6 ♂, 5 ♀, Var, Massif d'Estérel, 30.v.–13.vii.1961 (*Benassy*) (MHN); 2 ♀, St Tropez, 13.vi.1980, 1 ♂, 1 ♀, 16.vi.1980 (*Bouček*) (BMNH). **Yugoslavia**: 1 ♀, Dalmatia, Isl. Mljet N.P., 10.viii.1980 (*Bouček*) (BMNH).

HOSTS. Unidentified microlepidopterous leaf-miner on *Phillyrea* sp. (Domenichini, 1966*a*).

The *clavicornis*-group

Spur of mid tibia in ♀ (Fig. 345) very short, its length less than half that of basitarsus and hardly as great as breadth of tibia; in ♂ weak, its length not greater than breadth of tibia. Mesosternum in profile (Fig. 346) convex and short. Antenna of ♂ (Fig. 357) without whorls of long dark setae on flagellum; scape with ventral plaque extending most of its length, the plaque with a row of setae which arise from its inner edge. Other characters much as in the *lycidas*-group.

Aprostocetus (Aprostocetus) clavicornis (Zetterstedt) **comb. rev.**

(Figs 344–346, 457, 600, 677, 713)

Entedon clavicornis Zetterstedt, 1838: 428. Lectotype ♀, SWEDEN: Lapland (ZI), designated by Graham (1961*b*: 49) [examined].

Cirrospilus Euedochus Walker, 1838*b*: 204. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 49) [examined].

Cirrospilus Lamius Walker, 1839*a*: 327. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 49) [examined].

Aprostocetus clavicornis (Zetterstedt) Graham, 1961*b*: 49.

Tetrastichus clavicornis (Zetterstedt) Domenichini, 1966*a*: 181; 1966*b*: 25.

The specimens recorded as *clavicornis* by Erdös (1971: 238) were misidentified and belong to the *pausiris*-group of *Aprostocetus*.

♀. Head as broad as or hardly broader than mesoscutum, hardly more than twice as broad as long; POL 1·5–1·6 OOL, OOL 1·5–1·8 OD. Eyes 1·2–1·3 times as long as broad, separated by slightly more than their length. Malar space 0·55–0·60 length of eye, sulcus nearly straight, with a small fovea below eye. Mouth 1·3–1·5 malar space. Setae of head usually pale (grey in dark ♀). Antenna (Fig. 344) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum not or hardly greater than breadth of mesoscutum; pedicellus about twice as long as broad, fully as long as, or slightly longer than F1; anelli (Fig. 713); funicle proximally at least a little stouter than pedicellus, thickening very slightly distad, its segments equal or (usually) decreasing very slightly in length, F1 1·0–1·6 times, F2 1·0–1·2 times, F3 0·8–1·0 times as long as broad; clava slightly broader than F3, somewhat longer than F2 plus F3, 2·30–2·75 times as long as broad, obtuse or bluntly pointed, with C1 and C2 each subquadrate, spine about 0·25 length of C3, with apical seta about as long as spine; sensilla relatively sparse, uniseriate, moderately long, some with rather projecting blades. Thorax 1·55–1·70 times as long as broad; propodeal slope about 60°. Mesosternum (Fig. 346) unusually short; hind coxae almost vertical. Setae of thorax usually pale, some a little darker in dark forms. Pronotum at most 0·25 as long as mesoscutum. Mid lobe of mesoscutum usually a little longer than broad, occasionally as long as broad, moderately convex, shiny, reticulation with most areoles 2–3 times as long as broad; median line usually absent, rarely partly traceable in some lights; 3–4

(–5) adnotaular setae on each side. Scutellum moderately strongly convex, 1·2–1·3 times as broad as long, sculptured as mesoscutum but with shorter areoles; submedian lines about equidistant from each other and from sublateral lines, or slightly nearer to the latter, enclosing a space 2·0–2·3 times as long as broad; setae equal, their length nearly or just equal to distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum about twice as broad as long, nearly semicircular. Propodeum rather broadly but not deeply emarginate, medially slightly shorter than or barely as long as dorsellum, shiny, with fine, superficial reticulation; median carina distinct; spiracles nearly circular, separated by nearly their major diameter from metanotum; callus with 2–3 (–4) setae. Legs rather short, moderately stout; hind femora about 3·5 times as long as broad; spur of mid tibia (Fig. 345) extremely short for the genus, fourth tarsomere very slightly shorter than basitarsus. Forewing 2·30–2·35 times as long as broad; costal cell somewhat shorter than *M*, 9·5–11·0 times as long as broad; *SM* with 3–5 dorsal setae; *M* not thick, 3·2–4·4 times length of *ST*, its front edge with 10–13 setae; *ST* at about 45°, weakly curved, very thin proximally, expanding gradually, stigma relatively small; *PM* a short to moderately long stub; speculum small, not extending below *M*; wing beyond it rather thickly pilose; cilia 0·40–0·55 length of *ST*. Hindwing obtuse or subobtuse (slightly pointed in small ♀); cilia 0·27–0·38 breadth of wing. Gaster (Fig. 346) oblong-lanceolate, its sides tending to be subparallel in dorsal view, 1·3–1·6 times as long as head plus thorax, 3·3–4·2 times as long as broad, narrower than thorax; last tergite as long as or (usually) somewhat longer than broad; ovipositor sheaths projecting by a quarter, to the whole length, of last tergite; longest seta of each cercus about 1·4 times length of next longest; gaster slightly compressed, in profile (Fig. 346) with hypopygium (Fig. 677) usually prominent, its tip situated slightly beyond middle of gaster.

Body black, with a weak (sometimes hardly perceptible) metallic tinge, varying from obscure greenish bronze through greenish to bluish; gaster hardly metallic but often with middle of disc bronze; mouth-edge often testaceous or yellowish, in paler specimens face below toruli and a triangle before median ocellus yellowish, occasionally also inner orbits narrowly; upper angle of mesopleuron yellowish, rarely also prepectus and mesopleuron partly. Coxae black, or yellowish distally, fore coxae sometimes partly to wholly yellow; legs otherwise yellowish with fore tarsi and tips of mid and hind tarsi brownish, hind femora more or less infuscate proximally, in darker females mid and even fore femora infuscate proximally, whilst Irish and Scottish females may have all femora black except their tips; exceptionally dark females have hind tibiae infuscate medially. Antennae in paler females with scape and pedicellus yellow, flagellum testaceous; in darker females scape is more or less infuscate dorsally, or wholly so, pedicellus is infuscate dorsally, articulations of flagellar segments and the clava become brownish, occasionally the whole flagellum is dorsally infuscate. Tegulae yellowish, or more or less infuscate posteriorly. Wings hyaline, venation testaceous or yellowish. Length 1·7–2·3 mm.

♂. Antenna (Fig. 457) with scape about 0·8 length of eye, 2·2–2·3 times as long as broad, with a row of setae on outer aspect near inner edge of ventral plaque, the latter 0·65–0·80 length of scape; pedicellus plus flagellum 1·30–1·35 breadth of mesoscutum; pedicellus about twice as long as broad, 1·50–2·0 times as long as F1; funicle proximally about as stout as pedicellus, thickening somewhat distad; F1 very slightly shorter and narrower than the following segments, 1·0–1·3 times as long as broad; following segments subequal in length, F2 1·0–1·3 times, F3 1·00–1·25 times as long as broad, F4 subquadrate; clava slightly broader than F4, from somewhat longer than F3 plus F4 to nearly as long as F2 plus F3 plus F4, 2·75–3·10 times as long as broad, with C1 slightly transverse, C2 about as long as C1 and subquadrate, C3 much shorter, spine about 0·5 length of C3; sensilla sparse; flagellum with whitish setae some of which are moderately long, but without whorls of long dark setae; dorsal surface of clava with rather long curved white setae. Genitalia (Fig. 600).

Mouth-edge often, sometimes whole face, yellow, also upper angle of mesopleuron, sometimes sides or whole of dorsellum. Antennae in pale males yellow with tip of clava brownish, in dark males yellowish with clava brown, ventral plaque or whole of scape blackish. Legs in pale forms yellow with hind coxae black, tips of fore tarsi and fourth segment of mid and hind tarsi brown; in darker forms mid coxae and then fore coxae become partly to wholly black, the hind femora and sometimes fore and mid femora are infuscate proximally, whilst occasionally the hind femora are black with yellow tips. Length 0·9–1·2 mm.

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Netherlands**, **Norway**, **Sweden**.

HOSTS. *Oligotrophus* (= *Semudobia*) *betulae* (Winnertz) in catkins of *Betula pendula*, *O.* (= *S.*) *tarda* (Roskam) in catkins of *B. pubescens*, and *O.* (= *S.*) *skuhravae* (Roskam) in bract-scales of *Betula* sp. (material sent by J. C. Roskam).

COMMENTS. Males evidently form an unusually high proportion of the population in *clavicornis*. From my own collecting I find an average of about 40 per cent males; Roskam (*in litt.*) quoted figures of his own rearings in which the total of males produced actually exceeded slightly the number of females.

In 1961 I gathered some parasitized specimens of the aphid *Drepanosiphum platanoidis* (Schrank) on leaves of *Acer platanoides* at Freshfield, Lancashire. On 11.viii.1961 a ♀ *Aprostocetus clavicornis* emerged from one of the aphid mummies. From the other parasitized aphids only *Aphelinus thomsoni* emerged and I am quite unable to explain the presence of the *Aprostocetus*. The parasitized hosts had been carefully isolated so that no contamination was possible.

The *pausiris*-group

Differs from the *lycidas* and *caudatus*-groups in having the longest seta of each cercus equal in length to or only a little longer than the next longest seta (except in *occidentalis* in which it is nearly 1·5 times as long) and straight or slightly curved (but slightly kinked medially in *occidentalis*), usually pale. Body weakly to strongly metallic except in some mainly yellow forms. Antennae of ♂ variable in form: scape with ventral plaque situated wholly or mainly in the upper half; segments of funicle with or (*arrabonicus*, *meridionalis*) without compact subbasal whorls of long dark setae (but males of several species are unknown). Row of setae (not counting subapical seta) on front edge of ♀ scape normally extending above the middle.

A rather heterogeneous group and not very clearly defined. The biology of many of the species is unknown; the recorded hosts of the remainder belong to several taxonomic groups and possibly indicate that the *pausiris*-group is not a completely natural one. Discovery of the males of other species may help to clarify its status.

Aprostocetus (Aprostocetus) laticeps sp. n.

(Fig. 225)

♀. Head 1·2 times as broad as mesoscutum, about 2·6 times as broad as long; temples almost nil; POL 1·1 OOL, OOL twice OD. Eyes 1·15 times as long as broad, separated by about 1·7 times their length, virtually bare. Malar space 0·7 length of eye, sulcus nearly straight. Mouth about 1·1 times malar space. Antenna (Fig. 225) with scape 0·78 length of eye, about 3 times as long as broad, not nearly reaching median ocellus; pedicellus plus flagellum 1·1 times breadth of mesoscutum; pedicellus 1·85 times as long as broad, virtually as long as F1; flagellum stout, funicle proximally about 1·5 times as broad as pedicellus, but tapering very slightly distad, its segments equal in length, each about 1·5 times as long as broad; clava not broader than F3, about as long as F2 plus F3, about 3·5 times as long as broad, subobtuse, with C1 and C2 subequal, each about 1·5 times as long as broad, C3 shorter, spine about 0·2 length of C3, with apical seta nearly as long as spine; sensilla rather numerous, in 2 partly overlapping rows on each segment, not very long, with moderately long decumbent bases and almost equally long projecting blades. Thorax 1·5 times as long as broad; propodeal slope about 45°. Pronotum very short. Mid lobe of mesoscutum slightly broader than long, moderately convex, not very shiny, with excessively fine engraved reticulation having most areoles about 3 times as long as broad; median line indicated in posterior third; 4 adnotaular setae on each side. Scutellum hardly broader than long, strongly convex, rather shiny, more finely and weakly sculptured than mesoscutum; submedian lines diverging slightly caudad, hardly nearer to sublateral lines than to each other, enclosing a space about 2·7 times as long as broad; setae subequal, their length nearly as great as distance between submedian lines, anterior pair slightly behind middle. Dorsellum oval with both anterior and posterior edges curved, twice as broad as long. Propodeum narrowly emarginate, medially as long as dorsellum, shiny, with fine, lightly engraved reticulation; median carina sharp, expanded posteriorly; callus with 6–8 setae. Legs of medium length; tibiae rather slender; hind coxae slightly oblique, twice as long as broad; hind femora about 4 times as long as broad; spur of mid tibia 0·8 length of basitarsus, fourth tarsomere distinctly shorter than basitarsus. Forewing 2·15 times as long as broad; costal cell as long as *M*, about 6 times as long as broad, its lower surface with a row of setae; *SM* with 4 dorsal setae; *M* thick, especially proximally, 2·3 times length of *ST*, its front edge with about 12 setae; *ST* at 50°, rather thin proximally but expanded beyond half its length to form a moderate-sized, oblong stigma; *PM* a very short stub; basal vein nearly bare, speculum moderate-sized but not extending below *M*, open below at base; wing just beyond it moderately thickly pilose, but very thickly distad; cilia 0·1 length of *ST*. Hindwing rounded; cilia 0·1 breadth of wing. Gaster ovate, somewhat longer and slightly broader than thorax, 1·65 times as long as broad, acute; last tergite somewhat broader than long; ovipositor sheaths projecting very slightly; longest seta of each cercus slightly longer than the next longest, curved; tip of hypopygium at about 0·5 length of gaster.

Body black with extremely weak bluish tinge in places. Antennae fuscous, scape and pedicellus testaceous beneath. Coxae, trochanters partly, and femora except their tips, black; legs otherwise testaceous with fourth tarsomere slightly darker, pretarsi fuscous. Tegulae testaceous with hind edge darker. Wings hyaline, venation brown. Length 1·95 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Vaucluse, near Bédoin, 13.vii.1980 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. I have examined a ♂ (Majorca: Salinarde Levante, 7.vi.1972 (*R. R. Askew*)) which might belong to this species but in view of the uncertainty I am not including it in the description.

Aprostocetus (Aprostocetus) stenus **sp. n.**

(Fig. 224)

♀. Head very distinctly broader than mesoscutum (up to 1·4 times as broad), with temples about 0·27 length of eyes; POL about 1·25 OOL, vertex distorted so that ratio OOL: OD is not measurable. Head in front view only very slightly broader than high. Eyes separated by about 1·25 times their length. Malar space about 0·7 length of eye, sulcus weakly curved. Mouth about 1·2 malar space. Antenna (Fig. 224) with scape about 0·7 length of eye, at most 3 times as long as broad, not nearly reaching median ocellus; pedicellus plus flagellum 1·5–1·6 times breadth of mesoscutum; pedicellus about twice as long as broad and about as long as F1; funicle filiform, a little stouter than pedicellus, its segments subequal or decreasing very slightly in length, F1 1·6–1·8 times, F3 1·5–1·6 times as long as broad; clava a little broader than F3, longer than F2 plus F3, 3·5–4·0 times as long as broad, tapering and acute apically, spine long and conspicuous, with apical seta about 0·5 length of spine; sensilla rather sparse, irregularly uniseriate. Thorax unusually narrow, 1·65–2·00 times as long as broad (2·4 times in one specimen in which it appears to be abnormally compressed); propodeal slope about 45°. Pronotum moderately long, subconical, with row of setae near hind margin and a very few others at sides. Mid lobe of mesoscutum as long as or slightly longer than broad, rather dull, reticulation superficial, rather coarse (wide-meshed) though tending to be slightly finer in the median line, with most areoles about twice as long as broad; median line absent or indicated merely by a slight change of curvature; 3 adnotaular setae on each side. Scutellum not or only slightly broader than long, rather strongly convex, much more finely reticulate than mesoscutum with areoles about 3 times as long as broad; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·5 times as long as broad; setae equal, their length about 0·6 distance between submedian lines, anterior pair about in middle. Dorsellum 2·0–2·5 times as broad as long. Propodeum very weakly and not very broadly emarginate, medially a little longer than dorsellum, shiny, weakly alutaceous; median carina vague; callus with 2 setae. Legs moderately long; tibiae rather slender; hind femora about 3·5 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing long and narrow, 2·4–2·7 times as long as broad; costal cell 11·5–14·0 times as long as broad, its lower surface with a complete row of setae; *SM* with 2–4 dorsal setae; *M* fairly thick, about 1·25 times as long as costal cell and 3·9–4·5 times length of *ST*, its front edge with 9–12 setae; *ST* moderately thick, stigma distinct; *PM* a spur 0·3–0·5 length of *ST*; speculum rather narrow; basal cell with a few scattered setae; wing beyond speculum uniformly and rather densely pilose, the pilosity extending up close to *M*; cilia about 0·5 length of *ST*. Hindwing pointed; cilia 0·33–0·40 breadth of wing. Gaster ovate to long-ovate, as long as or slightly longer than head plus thorax, 1·8–2·6 times as long as broad, acute and sometimes slightly acuminate; last tergite varying from somewhat broader than long to about as long as broad; ovipositor sheaths projecting very slightly; tip of hypopygium at about 0·5 length of gaster.

Body black with a very faint bluish tinge in places; sutures of head and notauli tending to be testaceous. Antennal scape and pedicellus black, flagellum brownish black. Legs blackish with trochanters, tips of all femora broadly, bases of tibiae narrowly and their tips broadly, and tarsi proximally, testaceous; fore tibiae sometimes wholly pale. Tegulae brown. Wings slightly tinged with grey, venation greyish brown. Length 1·4–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

5 ♀. Holotype ♀, **Great Britain**: England, Oxfordshire, Bald Hill, near Lewknor, 28.v.1960, swept from chalk grassland (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Bohemia, Praha-Ruzyně, 18.v.1953 (*Bouček*) (BMNH). **Great Britain**: 3 ♀, same data as holotype (BMNH).

HOST. Unknown; possibly some species of Diptera: Cecidomyiidae on grass.

COMMENT. The body of this species appears to be rather weakly sclerotized and probably this causes the thorax to be sometimes abnormally compressed during the pupal stage; but even allowing for this, it has an unusually long and narrow thorax.

Aprostocetus (Aprostocetus) bakkendorfi sp. n.

(Figs 226, 227)

♀. Differs from ♀ of *stenus* as follows. Head slightly narrower than, or at most as broad as mesoscutum. Antenna (Fig. 226) with scape longer, reaching level of median ocellus or even slightly above it; pedicellus rather more than twice as long as broad, very slightly longer than F1; funicle filiform, its segments subequal in length, F3 1·6–1·8 times as long as broad; clava less acute, 2·8–3·5 times as long as broad. Thorax squat, 1·35–1·45 times as long as broad. Mid lobe of mesoscutum slightly broader than long, rather more shiny, with finer reticulation, with 4 adnotaular setae on each side. Scutellum about 1·25 times as broad as long; setae equal, their length 0·6–0·7 distance between submedian lines. Dorsellum and propodeum relatively more transverse. Legs less slender. Forewing 2·10–2·25 times as long as broad; costal cell 10–13 times as long as broad; *M* only slightly longer than costal cell, 2·8–3·2 times length of *ST*; cilia 0·25–0·30 length of *ST*. Hindwing obtuse; cilia 0·25–0·30 breadth of wing. Gaster distinctly (up to 1·3 times) longer than head plus thorax.

Colour as in *stenus*. Length 1·6–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

5 ♀. Holotype ♀, **Denmark**: Sjaelland, Köge Aa, 3.v.1968 (*E. Larsen*) (BMNH).

Paratypes. **Denmark**: 4 ♀, same data as holotype (BMNH).

HOST. Probably some species of Diptera: Cecidomyiidae. The material was reared from galls on *Astragalus glyciphyllos*.

COMMENT. The above material was given to me by the late O. Bakkendorf, who had originally intended to describe the species which I had indicated to be new. As he was not able to do so I now dedicate it to him.

Aprostocetus (Aprostocetus) taxi sp. n.

(Figs 219, 220)

[? *Tetrastichus micantulus* Thomson; de Gaulle, 1908: 107. Misidentification.]

[*Geniocerus claviger* (Thomson); Erdös, 1954: 356; 1971: 241; Domenichini, 1966*a*: 171; 1966*b*: 25. Misidentifications.]

Domenichini (1966*a*: 171) accepted the Erdös record of *claviger* Thomson as correct and stated 'diagnosi confermata da Graham'. This was clearly due to a misunderstanding as I had informed him that Erdös had misidentified *claviger*. The species supposed by Erdös to be *claviger* is here described as new.

♀. Head slightly broader than mesoscutum; temples 0·15–0·17 length of eyes; POL 1·6–1·7 OOL, OOL about twice OD. Eyes about 1·3 times as long as broad, sparsely clothed with rather short setae. Malar space about 0·5 length of eye, sulcus nearly straight. Mouth nearly twice malar space. Mandibles rather large, with a long acute outer tooth, a slightly shorter and less acute median tooth, and a much shorter blunt inner tooth. Antenna (Fig. 219) with scape slightly shorter than eye, 3·2–3·5 times as long as broad, broadest a little below middle and tapering slightly upwards; pedicellus plus flagellum slightly less than breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, somewhat longer than F1; 3, possibly 4, anelli; flagellum short and strongly clavate; funicle proximally slightly stouter than pedicellus, thickening slightly distad; F1 slightly longer than broad, F2 subquadrate, F3 slightly transverse; clava distinctly broader than F3, 1·75–1·80 times as long as broad, obtuse, with C1 transverse, spine short with apical seta about as long as spine; sensilla sparse, relatively short, decumbent; flagellum clothed with moderately long, rather strongly outstanding setae. Thorax about 1·7 times as long as broad; propodeal slope about 60°. Pronotum very short. Mid lobe of mesoscutum about as broad as long, convex, moderately shiny, with extremely fine but sharply engraved reticulation having most areoles about 3 times as long as broad; median line fine but traceable throughout; 2–3 moderately long adnotaular setae on each side. Scutellum about 1·2 times as broad as long, strongly convex, more finely sculptured than mesoscutum; submedian lines about 1·5 times as far from each other as from sublateral lines, enclosing a space 2·0–2·2 times as long as broad; setae equal, their length almost as great as distance between submedian lines, anterior pair slightly to well behind middle. Dorsellum about twice as broad as long. Propodeum rather weakly and not broadly emarginate, though medially a little shorter than dorsellum, shiny, delicately alutaceous; median carina slightly raised; spiracles very small, circular, separated by about half their diameter from metanotum. Legs of moderate length, not stout; hind coxae slightly oblique, about 2·5 times as long as broad; hind femora about 3·5 times as long as broad; spur of mid tibia about 0·5 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing (Fig. 220) rather more than twice as long as broad; costal cell slightly shorter than *M*, about 10 times as long as broad, its lower surface with a complete row of setae; *SM* with 3–4 dorsal setae; *M* somewhat thickened, 2·9–3·0 times length of *ST*, its front edge with 9–12 setae; *ST* at 50°–60°, straight and rather thin proximally (where it tends to be subhyaline) but thickening gradually to form a relatively large stigma; *PM* a short stub; speculum very narrow, not extending below *M*; wing beyond it fairly densely and almost uniformly pilose; cilia 0·20–0·25 length of *ST*. Hindwing obtuse; cilia 0·27–0·33 breadth of wing. Gaster, when undistorted, strongly acute, about 1·3 times as long as head plus thorax, somewhat narrower than thorax, 3·0–3·5 times as long as broad; last tergite about as long as broad; ovipositor sheaths projecting slightly; tip of hypopygium slightly beyond half length of gaster. In the two paratypes from Hungary the apical segments of the gaster are turned upwards and the ovipositor sheaths are abnormally exposed, so that the gaster appears shorter than usual.

Body black with weak bronze metallic tint; mandibles reddish testaceous with darker teeth. Antennae yellowish to reddish testaceous with base and sometimes dorsal edge of scape fuscous, base of pedicellus slightly infuscate. Coxae, and femora mainly, coloured like body; trochanters more or less, and tips of all femora broadly, testaceous; tibiae fuscous with bases and tips testaceous, fore tibiae sometimes wholly pale; tarsi testaceous proximally but darkening distad, fourth tarsomere fuscous. Tegulae reddish to fuscous. Wings subhyaline, venation testaceous to brown. Length 1·3–1·5 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Great Britain**: England, Oxfordshire, Aston Rowant, 14.v.1960, swept from foliage of *Taxus baccata* (*Graham*) (BMNH).

Paratypes. **Hungary**: 2 ♀, Kalocsa, 9.iv.1945 (*Erdös*) (TM).

Host. Unknown.

COMMENT. This is a rather isolated species in the *pausiris*-group. Superficially it resembles *lysippe* which differs especially in having very large propodeal spiracles.

Aprostocetus (Aprostocetus) aristaeus (Walker) **comb. rev.**

(Figs 221–223, 494, 606)

Cirrospilus Aristaeus Walker, 1839*d*: 416. Lectotype ♀, GREAT BRITAIN: Hampshire (BMNH), designated by Graham (1961*b*: 50) [examined].

Tetrastichus confusus Förster, 1861: 38. Lectotype ♀, SWITZERLAND: Roseggthal (*Förster*) (NM), designated by Graham (1961*b*: 50) [examined]. [Synonymized by Graham, 1961*b*: 50.]

Tetrastichus seticollis Thomson, 1878: 291. Lectotype ♀, SWEDEN: Skåne (ZI), designated by Graham (1961*b*: 50) [examined]. [Synonymized by Graham, 1961*b*: 50.]

Aprostocetus aristaeus (Walker) Graham, 1961*b*: 50.

Tetrastichus aristaeus (Walker) Domenichini, 1966*a*: 143; 1966*b*: 18; Bouček, 1977: 115.

♀. Setae of vertex and dorsum of thorax (especially mesoscutum) long and suberect (Figs 222, 223). Head slightly narrower than, or just as broad as mesoscutum; POL 1·40–1·75 OOL, OOL about twice OD. Eyes about 1·5 times as long as broad, separated by slightly more than their length, moderately thickly clothed with rather short setae. Malar space 0·66 length of eye, sulcus slightly curved. Mouth 1·2–1·3 malar space. Length of setae on vertex about 1·5 OD. Antenna (Fig. 221) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum slightly less than breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, much longer than F1 and sometimes nearly as long as F1 plus F2; funicle proximally slightly stouter than pedicellus, thickening slightly distad, with F1 1·1–1·4 times as long as broad and usually a little longer than F2 or F3, F2 quadrate or very slightly transverse, F3 slightly transverse; clava broader than F3, longer than F2 plus F3, 1·50–1·75 times as long as broad, obtuse, spine short, with apical seta 2–3 times as long as spine; sensilla rather sparse on funicle, numerous on clava, relatively short and broad, decumbent; setae of flagellum long (those of F1 and sometimes F2 as long as the breadth of the segments) and standing out strongly. Thorax 1·35–1·50 times as long as broad; propodeal slope 40°–50°. Pronotum relatively short. Mid lobe of mesoscutum fully as broad as or slightly broader than long, moderately convex, only moderately shiny, with extremely fine but fairly sharp, slightly engraved reticulation; median line sometimes extremely fine or obsolescent, sometimes distinct; 3–5 (–6) long adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, strongly convex, more finely sculptured than mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·3 times as long as broad; setae equal, their length about as great as distance between submedian lines, anterior pair approximately in middle. Dorsellum 2·5–3·0 times as broad as long. Propodeum strongly transverse, weakly and only moderately broadly emarginate though medially a little shorter than dorsellum, shiny, with extremely fine, obsolescent reticulation; median carina weak, expanded posteriorly; spiracles moderate-sized, oval, nearly touching metanotum; callus with 2 setae. Legs of medium length, somewhat slender; hind femora about 4 times as long as broad; spur of mid tibia virtually as long as basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing hardly more than twice as long as broad; costal cell slightly shorter than *M*, 9·5–11·0 times as long as broad; *SM* with 3–5 dorsal setae; *M* varying from rather thin to rather thick, 3·5–5·0 times length of *ST*, its front edge with 10–14 rather long setae; *ST* thin proximally but rapidly expanding to form a moderate-sized subrhomboidal stigma; *PM* rudimentary or a short stub; speculum rather small, hardly extending below *M*; wing beyond it rather thickly pilose; cilia as long as or somewhat shorter than *ST*. Hindwing obtuse or bluntly pointed; cilia about 0·3 breadth of wing. Gaster ovate, somewhat longer than head plus thorax, usually about as broad as thorax, 1·8–2·5 (–2·8) times as long as broad; last tergite slightly broader than long; ovipositor sheaths projecting slightly; tip of hypopygium at about 0·5 length of gaster.

Body black with moderately strong metallic tints which vary from dull bronze-green through olive to bluish green and dull bluish; disc of gaster most often bronze- or purplish-tinged. Antennal scape and pedicellus black with metallic tint; flagellum brown to blackish. Coxae, and femora except their tips more or less broadly, coloured like body; rest of femora, and tibiae, yellowish to testaceous, the hind tibiae and sometimes the mid tibiae more or less infuscate in dark specimens; tarsi brown to fuscous, mid and hind tarsi often testaceous proximally. Tegulae dark. Wings subhyaline or grey-tinged, venation testaceous to dark brown, the stigmal vein often decolourized proximally. Length 1·4–1·8 mm.

♂. Antenna (Fig. 494) with scape about 0·85 length of eye, reaching median ocellus, slightly more than twice as long as broad, with ventral plaque about 0·5 length of scape; pedicellus plus flagellum about 1·15 times breadth of mesoscutum; pedicellus 1·7–1·8 times as long as broad, longer than F1; funicle proximally hardly stouter than pedicellus, thickening slightly distad, with F1 somewhat shorter than the following segments and not or hardly longer than broad, following segments subequal or hardly decreasing in length, F2 slightly longer than broad, F3 hardly so, F4 quadrate; clava a little broader than F4, somewhat longer than F3 plus F4, about 2·5 times as long as broad; whorled setae rather short, those of F1 reaching about half-way along F2. Genitalia (Fig. 606). Length 1·2–1·3 mm.

MATERIAL EXAMINED

3 ♂, many ♀. **Czechoslovakia**, **Germany**, **Great Britain**, **Ireland**, **Norway**, **Sweden**, **Switzerland**, **Yugoslavia**.

HOST. Unknown.

COMMENT. *A. aristaeus* appears to be associated particularly with deciduous woods, where females are often abundant in shady areas. Males are rather rare.

Aprostocetus (Aprostocetus) pausiris (Walker) **comb. rev.**

(Figs 232, 235, 497, 603, 714)

Cirrospilus Pausiris Walker, 1839*a*: 327. Lectotype ♀, GREAT BRITAIN: (BMNH), designated by Graham (1961*b*: 50) [examined].

Cirrospilus Cyrrhus Walker, 1839*b*: 350. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 50) [examined]. [Synonymized by Graham, 1961*b*: 50.]

Cirrospilus Anticlea Walker, 1839*c*: 182. Lectotype ♀, GREAT BRITAIN: (BMNH), designated by Graham (1961*b*: 50) [examined]. [Synonymized by Graham, 1961*b*: 50.]
[*Geniocerus charoba* Walker; Erdös, 1954: 358. Misidentification.]
Aprostocetus pausiris (Walker) Graham, 1961*b*: 50.
Tetrastichus pausiris (Walker) Domenichini, 1966*a*: 143; 1966*b*: 43; Burks, 1979: 999.

♀. Head hardly broader than mesoscutum, 2·2–2·3 times as broad as long; POL 1·65–1·90 OOL, OOL 1·5–1·6 OD. Eyes about 1·3 times as long as broad, with short, very sparse pubescence, separated by about 1·2 times their length. Malar space 0·6–0·7 length of eye, sulcus weakly curved. Mouth about 1·15 malar space. Antenna (Fig. 232) with scape about 0·75 length of eye, not reaching median ocellus, 3·3–3·5 times as long as broad; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus slightly more than twice as long as broad, as long as or very slightly longer than F1; anelli (Fig. 714); funicle proximally as stout as or hardly stouter than pedicellus, thickening conspicuously distad; F1 1·6–2·0 times as long as broad, F3 quadrate; clava distinctly broader than F3, 1·7–2·0 times as long as broad, bluntly pointed, with C1 a little broader than long and occupying virtually half the length of the clava, spine very short and not always clearly visible; sensilla sparse on funicle, more numerous on clava, uniseriate, decumbent; setae of flagellum nearly straight, rigid, standing out but rather short. Thorax 1·55–1·70 times as long as broad; propodeal slope 50°. Mid lobe of mesoscutum about as long as broad, convex, moderately shiny, with extremely fine superficial reticulation having most areoles twice or hardly more than twice as long as broad; median line distinct (usually throughout); 3–5 adnotaular setae on each side. Scutellum much shorter than mesoscutum, about 1·3 times as broad as long, moderately convex; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 2·0–2·2 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair approximately in middle. Dorsellum about 2·5 times as broad as long. Propodeum narrowly and only moderately deeply emarginate, medially as long as or slightly shorter than dorsellum, shiny, delicately alutaceous; median carina distinct, broadening caudad; spiracles rather small, oval, nearly touching metanotum; callus with 2 setae. Legs of moderate length; hind coxae slightly oblique, about twice as long as broad, shiny, with extremely fine weak engraved reticulation; hind femora about 3·7 times as long as broad; spur of mid tibia 0·7–0·8 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing (Fig. 237) 2·10–2·25 times as long as broad; costal cell slightly shorter than *M*, 10–12 times as long as broad, its lower surface with a complete row of setae; *SM* with (3–) 4–7 dorsal setae; *M* not thin, 3·6–5·0 times length of *ST*, its front edge with 11–14 setae; *ST* at 40°–45°, thin proximally but expanding gradually to form a stigma which varies in size but is typically moderate-sized and longer than high; *PM* variable, from a short stub to half as long as *ST*; speculum rather small but extending as a very narrow strip below *M* as far as *ST*; usually a bare area between *PM* and *ST*; wing beyond speculum moderately thickly pilose; cilia 0·25–0·55 length of *ST*. Hindwing subobtuse or slightly pointed; cilia 0·22–0·35 breadth of wing. Gaster (Fig. 235) long-ovate to sublanceolate, as long as or slightly longer than head plus thorax, 2·0–2·6 times as long as broad, acute and slightly acuminate, as broad as or slightly broader than thorax; last tergite as long as or slightly longer than broad; ovipositor sheaths projecting slightly; tip of hypopygium at about 0·4 length of gaster.

Colour very variable. Body most often black with metallic tints and little or no yellow coloration but sometimes with more or less extensive yellow markings on head and thorax, less often on the gaster. The nominotypical form, which is the usual one in northern Europe, has the body black with moderately strong blue-green to blue, less often green or bronze-green, metallic tints, disc of gaster bronze-black; sutures of face and frons sometimes yellowish, occasionally also mouth-edge; coxae and proximal half to two-thirds of all femora black, legs otherwise usually yellow with fore tarsi mainly and mid and hind tarsi distally brown; hind tibiae sometimes with dark postmedian ring, or extensively infuscate, mid tibiae occasionally similarly infuscate; antennae black, scape metallic; tegulae and humeral plate of wing partly to wholly yellow. Wings hyaline, venation brown, *ST* tending to be paler proximally. Length 1·2–2·2 mm.

Occasionally in southern English and Swedish specimens the orbits and mouth-edge are yellowish, whilst the dorsellum may be similarly coloured; some Swedish females have fore and mid femora yellow. Such forms appear to be frequent in central Europe, where even more richly yellow-marked forms occur. In Czechoslovakia I have taken all the grades of coloration together. Additional yellow colour tends to appear first on the posterior part of the scutellum and of the mid lobe of the mesoscutum and eventually covers the whole of these sclerites; it may then appear on the axillae, scapulae and pronotum; on the head the pale colour may spread to cover the whole of its front surface. At the same time the dark marking of the femora is progressively reduced, yellow markings may appear on the gaster and in extreme forms there is a yellow transverse band on each segment. Some females from Sweden, and one from Amurland, are very richly yellow-marked.

Females from southern Europe tend to be rather small; the mouth-edge is often broadly yellowish, the dorsellum has a pair of pale spots, the antennal scape is yellowish beneath, occasionally entirely so, the fore and mid coxae are partly yellow, whilst the dark marking of the femora is reduced, with sometimes only the hind femora infuscate, or all femora yellow; the wing-venation tends to be paler.

♂. Antenna (Fig. 497) with scape distinctly shorter than eye, not reaching median ocellus, 2·2–2·5 times as long as broad, with ventral plaque 0·40–0·45 length of scape; pedicellus plus flagellum 1·65–1·75 times breadth of mesoscutum; pedicellus 1·6–1·7 times as long as broad, slightly longer than F1; funicle filiform, somewhat stouter than pedicellus, with F1 much shorter than F2 and quadrate, following segments subequal in length, each 1·7–2·2 times as long as broad; clava about as long as F3 plus F4, 4·0–4·5 times as long as broad; whorled setae long, those of F1 reaching level with tip of F3. Genitalia (Fig. 603).

Body with at most upper angle of mesopleuron and sometimes the mouth-edge pale.

MATERIAL EXAMINED

12 ♂, many ♀. **Czechoslovakia**, **Denmark**, **France**, **Great Britain**, **Greece**, **Hungary**, **Ireland**, **Netherlands**, **Norway**, **Portugal** (including Madeira), **Spain**, **Sweden**, **Yugoslavia**, **U.S.S.R.**; **North America**.

HOSTS. *Dasineura leguminicola* Lintner (Peck, 1963: 143). I am sure that it has other hosts because it occurs in vast numbers in areas dominated by mixed grasses but where little or no *Trifolium* is present.

Aprostocetus (Aprostocetus) annulatus (Förster) **comb. n.**

(Figs 234, 238)

Tetrastichus annulatus Förster, 1861: 39. Lectotype ♀, SWITZERLAND: Engadin (NM), designated by Domenichini (1966*a*: 143) [not examined].
Tetrastichus annulatus Förster; Domenichini, 1966*a*: 143; 1966*b*: 17.

♀. Differs from ♀ of *pausiris* as follows. Antenna (Fig. 234) with F3 1·2–1·5 times as long as broad; F1 usually as in *pausiris* but in one specimen 2·5 times as long as broad. Gaster (Fig. 238) ovate to long-ovate, at most as long as head plus thorax, 1·25–1·80 times as long as broad. Thorax on average more squat, 1·3–1·6 times as long as broad.

Colour as in darker forms of *pausiris*. Hind tibiae often infuscate medially, sometimes very broadly so; mid tibiae sometimes pale, sometimes with a fuscous postmedian ring, more rarely with an additional but less distinct subbasal ring.

♂. Unknown.

MATERIAL EXAMINED

17 ♀. **Great Britain**: England, Middlesex, Southgate, 19.viii.1966 (*Graham*) (BMNH). Besides the original record from Switzerland, the species has also been recorded from France (Domenichini, 1966*b*: 17) but I have not examined this material.

HOST. Unknown.

Aprostocetus (Aprostocetus) arrabonicus (Erdös) **comb. rev.**

(Figs 233, 458, 605)

Baryscapus arrabonicus Erdös, 1954: 364. LECTOTYPE ♂, HUNGARY: Gijor, 30.v.1953 (Erdös) (TM), here designated [examined].
Aprostocetus arrabonicus (Erdös) Graham, 1961*b*: 50.
Tetrastichus arrabonicus (Erdös) Domenichini, 1966*a*: 144; 1966*b*: 19; Erdös, 1971: 212–213.

♀. Differs from ♀ of *pausiris* as follows. Head with malar space 0·55–0·60 length of eye. Antenna (Fig. 233) with scape broader, about 3 times as long as broad, tending to have more numerous setae on its ventral edge; pedicellus plus flagellum slightly less than breadth of mesoscutum; pedicellus 1·65–1·75 times as long as broad, distinctly longer than F1; F1 quadrate or only very slightly longer than broad, not or only a little longer than F2; F3 very slightly transverse; setae of pedicellus and flagellum slightly longer and more conspicuous. Hind femora about 4 times as long as broad; spur of mid tibia hardly shorter than basitarsus. Forewing with *M* 3·6–4·0 times length of *ST*. Gaster ovate, 1·5–1·9 times as long as broad; last tergite slightly to distinctly broader than long.

Body black, with distinct metallic tints as in *pausiris*; at most upper angle of mesopleuron testaceous. Antennae with flagellum testaceous to fusco-testaceous; tip of pedicellus sometimes pale. Legs coloured much as in *pausiris*; tibiae testaceous or more or less infuscate medially. Tegulae testaceous, hind edge sometimes darkened. Length 1·2–1·6 mm.

♂. Antenna (Fig. 458) with scape 0·85 length of eye, at least slightly less than twice as long as broad, with ventral plaque about 0·7 length of scape and placed mainly in upper half; pedicellus plus flagellum 1·1 times breadth of mesoscutum; pedicellus about 1·5 times as long as broad, longer than F1; F1 hardly as stout as pedicellus, distinctly shorter than the following segments, slightly transverse; F2, F3 and F4 subequal in length, as stout as pedicellus, not or only slightly longer than broad; clava slightly broader than F4, 2·3–2·5 times as long as broad; flagellum normally without whorls of long dark setae but clothed with short, somewhat outstanding setae. I have examined one ♂, however, with abnormal antennae in which 2 or 3 of the setae on the dorsal surface of each funicular segment are much longer than usual, nearly as long as the whorled setae of ♂ *aristaeus* (Fig. 494). Genitalia (Fig. 605).

Antennal scape black or mainly so; pedicellus blackish proximally, antenna otherwise testaceous. Coloration otherwise much as in ♀.

MATERIAL EXAMINED

13 ♂, 12 ♀. **Czechoslovakia, Great Britain, Hungary**.

HOST. Probably some species of Diptera: Cecidomyiidae on grass. I have examined specimens reared from inflorescences of foxtail grass (*Alopecurus pratensis*) though the host was not ascertained.

***Aprostocetus (Aprostocetus) occidentalis* sp. n.**

(Figs 231, 495, 602)

♀. Antenna (Fig. 231) with F3 1·4–1·7 times as long as broad; clava with conspicuous spine which is fully half as long as C3, with apical seta about 0·33 length of spine; other features as in *pausiris*. Thorax 1·60–1·65 times as long as broad. Anterior setae of scutellum usually slightly shorter than posterior setae. Propodeal callus with 4–6 setae. Gaster 1·9–2·5 times as long as broad; longest seta of each cercus about 1·5 times length of next longest, slightly kinked. Other structural characters as in *pausiris*.

Body black with moderately strong green to blue-green metallic tints; mouth-edge usually narrowly testaceous. Antennal scape and pedicellus black, the tip of the latter often reddish; flagellum fuscous. Coxae, and femora mainly, black with metallic tints; trochanters partly to mainly fuscous; tips of femora, and tibiae wholly or mainly, testaceous, the hind tibiae often narrowly to broadly infuscate medially, mid tibiae sometimes with a narrow to broad brown or fuscous postmedian band; fore tarsi brown to fuscous, mid and hind tarsi testaceous with fourth tarsomere and pretarsus fuscous, third tarsomere sometimes brown. Tegulae black. Wings hyaline, venation testaceous to brownish. Length 1·8–2·4 mm.

♂. Antenna (Fig. 495) with scape about 3 times as long as broad, shorter than eye but reaching median ocellus, with ventral plaque about 0·33 length of scape; pedicellus plus flagellum about 1·85 times breadth of mesoscutum; pedicellus 2·2 times as long as broad, hardly shorter than F1; funicle filiform, slightly stouter than pedicellus; F1 shorter than following segments but nearly twice as long as broad, following segments subequal in length, each about 3 times as long as broad; clava not broader than funicle, about as long as F3 plus F4, about 5·5 times as long as broad, with C1 and C2 each about twice, C3 1·5 times, as long as broad. Genitalia (Fig. 602).

MATERIAL EXAMINED

1 ♂, 49 ♀. Holotype ♀, **Spain**: Granada, Nerja, 3.vii.1974 (*Bouček*) (BMNH).

Paratypes. **Canary Islands**: 7 ♀, La Gomera, Chejelipes and Lomo Fragoso, north-west of San Sebastián, 20.i.1981 (*A. C. & W. N. Ellis*): 1 ♀, Tenerife, San Marcos, 26.iii.–2.iv.1968 (*B. van Aartsen*) (ITZ). **Sardinia**: 3 ♀, Villasimius, vi.1975 (*Bouček*) (BMNH). **Spain**: 27 ♀, Barcelona, Calella de la Costa, vi.1971 (*Bouček*) (BMNH); 1 ♂, Castellón, Benicassim, 13–15.vi.1973 (*Bouček*) (BMNH); 4 ♀, Alicante, Moraira, 17.vi.1973 (*Bouček*) (BMNH); 6 ♀, Tarragona, Salou, 11.vi.1973 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) larzacensis sp. n.

(Figs 214, 215)

♀. Differs from ♀ *pausiris* as follows. Antenna (Fig. 215) with pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus slightly shorter than, or almost as long as F1; funicle rather more slender than in *pausiris*, with rather longer segments, F1 1·9–2·2 times, F2 1·6–1·8 times, F3 1·1–1·5 times as long as broad; clava 2·2–2·5 times as long as broad; sensilla less numerous. Setae of scutellum slightly shorter. Propodeum strongly transverse, about 3 times as broad as long (breadth measured as distance between spiracles; length measured at level of spiracles). Gaster (Fig. 214) with ovipositor sheaths well exserted, projecting part of sheaths plus postcercale at least 0·5 length of hind tibia.

Body blue-green to blue with at most mouth-edge and upper angle of mesopleuron yellow; antennae, legs and wings coloured as in dark *pausiris*.

♂. Unknown.

MATERIAL EXAMINED

14 ♀. Holotype ♀, **France**: Aveyron, Causse du Larzac, near Couvertoirade, 11.viii.1975 (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, same data as holotype; 1 ♀, Gorges du Trévézel, 31.vii.1974; 6 ♀, Dordogne, Simeyrols, near Souillac, 2.viii.1974, 3 ♀, Les Eyzies, 4.viii.1974, 1 ♀, Castels, 5.viii.1974 (*Graham*) (BMNH). **U.S.S.R.**: 1 ♀, Moldavia, Kishinev, 15.viii.1963 (*Bouček*) (BMNH).

HOST. Unknown.

COMMENTS. The ♀ of *larzacensis* superficially resembles that of *longicauda* from which it differs in its shorter ovipositor, propodeum longer medially, and subequal cercal setae.

I name this species with respect for the people of the Causse du Larzac, who have striven so courageously to preserve it and their way of life.

Aprostocetus (Aprostocetus) aartseni sp. n.

(Fig. 216)

♀. Propodeum as in *pausiris*, narrowly and weakly emarginate, medially very slightly longer than dorsellum. Ovipositor sheaths plus postcercale 0·55 length of hind tibia. Antenna (Fig. 216). Other structural characters as in *larzacensis*.

Colour as in *larzacensis* but face below antennae yellow, also lower part of genae, outer orbits extremely narrowly, a wedge-shaped mark at each anterior corner of mid lobe of mesoscutum, touching the notaulus, and the whole dorsellum.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **Greece**: Corfu, Dassia, 'eind mai' 1971 (*B. van Aartsen*) (ITZ).

Paratype. 1 ♀, same data as holotype (MJG).

HOST. Unknown.

Aprostocetus (Aprostocetus) levadiensis sp. n.

(Fig. 217)

♀. Antenna (Fig. 217). Structurally resembles *pausiris* but differs in having scutellum fully 1·5 times as broad as long, the space enclosed by its submedian lines only 1·6 times as long as broad; femora slightly stouter; forewing with *M* fully 5 times length of *ST*; gaster with tip of hypopygium situated distinctly beyond the middle; ovipositor sheaths plus postcercale about 0·7 length of hind tibiae, projecting part of sheaths about 2·5 times length of postcercale.

Black with weak olive metallic tinge, extensively marked with yellow as follows: head except middle of frons, ocelli and most of occipital surface, sides of pronotum; mid lobe of mesoscutum except a semicircular area in front; axiallae except an external spot; scutellum except sides and anterior third;

prepectus; sides of gaster and a broad transverse band on each tergite. Antennal scape yellow, its tip fuscous, rest of antenna fuscous. Legs including fore coxae yellow; hind femora with brown dorsal mark in proximal half; fourth tarsomere of all legs fuscous. Tegulae yellow, their hind edge dark. Wings hyaline, venation greyish testaceous. Length 2·2 mm.

♂. Antenna with scape about 2·7 times as long as broad, with ventral plaque about 0·35 length of scape; pedicellus plus flagellum about 1·25 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle proximally stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2 and quadrate, following segments subequal in length, each about twice as long as broad; clava longer than F3 plus F4, nearly 4 times as long as broad. Forewing with *M* about 4·5 times length of *ST*. Gaster elliptic, nearly as long as but slightly narrower than thorax, with ventral plica.

MATERIAL EXAMINED

1 ♂, 1 ♀. Holotype ♀, **Greece**: Viotia, Levadia, Tsoukalades (loc. 2), 6.vi.1982 (*R. Danielsson*) (ZI). Paratype. 1 ♂, same data as holotype but 5.vi.1982 (ZI).

HOST. Unknown.

COMMENT. *A. levadiensis* much resembles *bucculentus* and *A. tompanus* but differs from the former in its shorter antennal flagellum and much shorter funicular segments and clava, much less projecting ovipositor sheaths and fewer setae on the propodeal callus; and from *tompanus* in its shorter funicular segments and clava, more exserted ovipositor sheaths and longer marginal vein relative to the stigmal.

Aprostocetus (Aprostocetus) malagensis sp. n.

(Fig. 213)

♀. Head hardly as broad as mesoscutum, about 2·5 times as broad as long; temples about 0·2 length of eyes; POL about 1·4 OOL, OOL about twice OD. Eyes about 1·35 times as long as broad, separated by slightly more than their length. Malar space 0·55 length of eye, sulcus distinctly curved. Mouth 1·35 malar space. Antenna (Fig. 213) with lower edge of toruli level with or hardly above ventral edge of eyes; scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum slightly less than breadth of mesoscutum; pedicellus nearly or just twice as long as broad, distinctly longer than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments subequal in length, F1 quadrate or very slightly longer than broad, F2 quadrate, F3 slightly transverse; clava distinctly broader than F3, as long as or somewhat longer than F2 plus F3, 1·4–1·6 times as long as broad, subobtuse, with C1 broader than long and occupying half the total length, C2 much shorter, C3 still shorter, spine moderately slender, about 0·33 length of C3, with apical seta about 1·5 times as long as spine; sensilla sparse on funicle, numerous on clava, uniseriate, rather short, decumbent; setae of flagellum short, standing out somewhat. Thorax 1·4 times as long as broad; propodeal slope 40°–45°. Pronotum subconical, about 0·33 length of mesoscutum, with numerous setae on each lateral third and a row of long ones near hind margin. Mid lobe of mesoscutum distinctly broader than long, weakly convex, moderately shiny, with extremely fine lightly engraved reticulation having most areoles 2–3 times as long as broad; median line distinct throughout; 3–4 adnotaular setae on each side. Scutellum about 1·4 times as broad as long, rather weakly convex in longitudinal axis though strongly so in transverse; sculpture as on mesoscutum but in parts somewhat finer; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space slightly less than twice as long as broad; setae equal or subequal, their length slightly less than distance between submedian lines, anterior pair in middle. Dorsellum 2·5–2·8 times as broad as long, hind edge obtusely angulate. Propodeum rather strongly transverse, rather broadly and deeply emarginate, medially 0·50–0·66 length of dorsellum, shiny, with very fine, superficial reticulation; median carina only slightly raised, broad anteriorly where it has a small fovea, thin medially, expanded posteriorly; spiracles moderate-sized, suboval, nearly touching metanotum; callus with 2 setae. Legs of medium length and thickness; hind coxae oblique, about twice as long as broad, shiny, with extremely fine and weak reticulation; hind femora about 3·5 times as long as broad; spur of mid tibia about 0·66 length of basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing 2·3–2·5 times as long as broad; costal cell 11–12 times as long as broad, virtually as long as *M*, its lower surface with a row of setae; *SM* with 4 dorsal setae; *M* of moderate thickness, 4·25–4·70 times length of *ST*, its front edge with 12–14 setae; *ST* at 45°–50°, not very thin proximally and broadened in distal half to form a small subrhomboidal stigma; *PM* rudimentary or a very short stub; speculum small, hardly extending below *M*; wing beyond it moderately thickly pilose, quite thickly distad; cilia about 0·33 length of *ST*. Hindwing slightly pointed; cilia about 0·25 breadth of wing.

Gaster oblong-lanceolate, about 1·5 times as long as as head plus thorax, slightly narrower than thorax, acute and slightly acuminate; last tergite as long as or slightly longer than broad; ovipositor sheaths projecting by a length varying from slightly less to slightly more than length of hind tibia; ovipositor sheaths plus postcercale 0·95–1·22 length of hind tibia; setae of cercus subequal, pale; tip of hypopygium slightly before half length of gaster.

Body black with strong green metallic tint, varying towards golden-green in places; sutures of frons and face yellowish, mouth-edge and upper angle of mesopleuron yellow. Antennal scape and pedicellus yellow, the latter subtestaceous proximally; flagellum yellow-testaceous. Coxae coloured like body but fore coxae yellow apically; legs otherwise bright yellow with fore tarsi and tips of mid and hind tarsi brownish. Tegulae yellow. Wings hyaline, venation yellow to testaceous. Length including ovipositor 2·05–2·30 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Spain**: Malaga, Estepona, 29 or 30.vi.1974 (*Bouček*) (BMNH).
Paratypes. 2 ♀, same data as holotype (*Bouček*) (BMNH; MVG).

HOST. Unknown.

COMMENT. In its short antennae, slightly flattened thorax and strongly projecting ovipositor sheaths, this species somewhat resembles *Eutetrastichus daira* (Walker) but differs in the higher insertion of its antennae, partly covered outer part of the rim of the propodeal spiracles, and colour, besides many other small features.

Aprostocetus (Aprostocetus) tompanus (Erdös) **comb. rev.**

(Figs 228–230)

Geniocerus tompanus Erdös, 195: 355. LECTOTYPE ♀, HUNGARY: Tompa, 28.vi.1949 (*Erdös*) (TM), here designated [examined].
Aprostocetus tompanus (Erdös) Graham, 1961*b*: 50.
Tetrastichus tompanus (Erdös) Domenichini, 1966*a*: 144; 1966*b*: 51; Erdös, 1971: 231; Kostjukov, 1978*b*: 443.

♀. Head very slightly broader than mesoscutum in specimens seen (which, however, have the head slightly collapsed), somewhat more than twice as broad as long; POL probably about 1·6 OOL, OOL nearly 2·5 times OD. Head in front view subcircular. Eyes about 1·4 times as long as broad, separated by somewhat more than their length. Malar space about 0·6 length of eye, sulcus slightly curved. Setae of head pale and weak, those of vertex shorter than OD. Antenna (Fig. 228) with scape somewhat shorter than eye, not reaching median ocellus; pedicellus plus flagellum 1·25–1·35 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, slightly shorter than or as long as F1; funicle proximally very slightly stouter than pedicellus, hardly thickening distad; F1 slightly longer than F2 and about 2·2 times as long as broad, F2 and F3 subequal in length, F2 1·8–2·0 times, F3 1·7–2·0 times as long as broad; clava slightly broader than F3, 2·7–3·0 times as long as broad, pointed, with C1 about 1·5 times as long as broad and occupying about half the total length, C2 much shorter and slightly transverse, C3 still shorter, spine short and thick, about 0·25 length of C3, with apical seta as long as spine; sensilla not very numerous, in one irregular row or two overlapping rows on funicular segments and C1, uniseriate on C2 and C3, moderately long, most decumbent, a few with short blades; setae of flagellum short, outstanding. Thorax (Fig. 229) 1·70–1·75 times as long as broad; propodeal slope 30°–40°. Pronotum subconical, about 0·4 length of mesoscutum; setae pale, a row of moderately long ones near hind margin and a second row of shorter setae in front of the first. Mid lobe of mesoscutum about as long as broad, moderately convex, somewhat dull, reticulation extremely fine and engraved, with most areoles not or only slightly longer than broad; median line fine but visible in some lights; 3–4 dark adnotaular setae on each side. Scutellum rather weakly convex in long axis though moderately so in transverse, 1·25–1·35 times as broad as long, with excessively fine engraved reticulation; areoles (except a few at base) 2–3 times as long as broad; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space twice as long as broad; setae dark, subequal, their length about 0·7 distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum about 2·5 times as broad as long, hind edge obtusely angulate. Propodeum narrowly and weakly emarginate, medially a little longer than dorsellum, shiny, with fine and delicately engraved reticulation;

median carina rather thin; callus with 3 setae. Legs of medium length and thickness; hind coxae about 2·5 times as long as broad, shiny, with very fine delicately engraved reticulation; hind femora about 3·5 times as long as broad; spur of mid tibia slightly shorter than basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing 2·25–2·35 times as long as broad; costal cell virtually as long as *M*, 10–14 times as long as broad, its lower surface with a row of setae; *SM* with 4 dorsal setae; *M* thin or moderately thin, 3·3–3·6 times length of *ST*, its front edge with 9–12 setae; *ST* at 40°–45°, very thin proximally but expanding slightly distad to form a poorly defined stigma; *PM* rudimentary; speculum small, not extending below *M*; wing beyond it rather thickly pilose, quite thickly distad; cilia 0·33–0·40 length of *ST*. Hindwing subobtuse; cilia about 0·33 breadth of wing. Gaster (Fig. 230) oblong-ovate or sublanceolate, as long as or somewhat longer than head plus thorax, about as broad as thorax, 2·1–2·7 times as long as broad, not or hardly acuminate; last tergite somewhat broader than long; ovipositor sheaths sometimes projecting only very slightly, but in the lectotype to half length of last tergite; tip of hypopygium at about half length of gaster.

Body in nominotypical form variegated with yellow and fuscous or black, the dark parts, especially of head and thorax, with a moderately strong golden-green, green or blue-green metallic tint. Head yellowish testaceous; ocellar triangle, middle or most of frons, most of occipital surface and sometimes a spot below toruli, black. Thorax with following parts yellow or testaceous: sides of pronotum and a large spot on either side of middle, or the whole sclerite except the middle; prepectus; sometimes prosternum; upper angle of mesopleuron; dorsellum; mid lobe of mesoscutum posteriorly and at least narrowly along notauli, sometimes wholly except an anterior spot; scapulae sometimes partly; scutellum sometimes posteriorly, or wholly; at least base of gaster dorsally, sometimes also a transverse bar on each tergite which does not reach the sides; ventral surface at least laterally. Antennae blackish with anelli pale. Fore coxae yellow or more or less black, mid coxae apically yellow or wholly black, hind coxae black or apically yellow; legs otherwise yellow with fore tarsi mainly, mid and hind tarsi distally, fuscous, hind femora narrowly to broadly black proximally, mid femora sometimes infuscate proximally. Tegulae yellow. Wings hyaline, venation yellow to testaceous. Length 1·40–1·75 mm.

A ♀ from Czechoslovakia (Svatý Prokop) is much darker. It has body black and metallic-tinged with only mouth-edge, facial sutures, inner orbits and a spot in each front angle of mid lobe of mesoscutum, testaceous; dorsellum obscurely testaceous laterally; all coxae black, also proximal half of all femora. It appears to agree in structure with nominotypical *tompanus* and I think it is just a dark form of it.

♂. Unknown.

MATERIAL EXAMINED

4 ♀. **Czechoslovakia**: 1 ♀, Praha, Suchdol, 3.vii.1961 (*A. Hoffer*) (MVG); 1 ♀, Praha, Svatý Prokop, 5.viii.1965 (*Graham*) (BMNH). **Hungary**: 1 ♀ (lectotype), Tompa, Zsíroskúti erdö, 28.vi.1949 (*Erdös*) 1 ♀ (paralectotype), 5.vi.1950 (*Erdös*) (TM).

HOST. Unknown.

COMMENT. *A. tompanus* was also recorded from Rumania, reared from *Apion* species by Andriescu (1960) but I have not been able to examine his material and the identification needs confirmation.

Aprostocetus (Aprostocetus) bucculentus (Kostjukov) **comb. n.**

(Figs 211, 212, 496, 607)

Tetrastichus bucculentus Kostjukov, 1978: 124–126. Holotype ♀, U.S.S.R.: Armenia, Ararat distr., Uranots, 16.i.1975 (*Arutyunyan*) (ZIL) [not examined].

A paratype of this species has been examined. As the original description is in Russian and the paper not easily available, a redescription, incorporating data from new material, in given here.

♀. Head just as broad as mesoscutum, hardly more than twice as broad as long; temples 0·25–0·33 length of eyes; POL about 1·6 OOL, OOL about 1·5 OD. Eyes about 1·25 times as long as broad, separated by nearly 1·5 times their length. Malar space 0·8–0·9 length of eye, sulcus slightly curved. Mouth hardly greater than malar space. Antenna (Fig. 212): lower edge of toruli level with or slightly above ventral edge of eyes; scape as long as eye, about 4 times as long as broad, nearly reaching level of vertex; pedicellus plus flagellum about 1·2 times breadth of mesoscutum; pedicellus 2·3–2·5 times as long as broad, nearly as long as F1; funicle proximally very slightly stouter than pedicellus, hardly thickening distad; F1 and F2 subequal in length, F3 a little shorter, F1 2·2–2·4 times, F2 2·2–2·3 times, F3 2·0–2·1 times as long as broad; clava distinctly broader than F3, nearly or just as long as F2 plus F3, 3·0–3·3 times as long as broad, bluntly pointed, with C1 about 1·5 times as long as broad and occupying half the total length, C2 much shorter and subquadrate, C3 still shorter; sensilla moderately numerous, biseriate on all segments except C3 which has one row, relatively short, slender, decumbent; setae of flagellum short, standing out slightly. Thorax about 1·7 times as long as broad; propodeal slope about 50°. Pronotum subconical, 0·12–0·15 length of mesoscutum, with numerous short setae and a row of 8–12 longer ones near hind margin. Mid lobe of mesoscutum as long as or slightly longer than broad, moderately convex, moderately shiny, with extremely fine, lightly engraved reticulation having most areoles 2–3 times as long as broad in the front part of the sclerite but much shorter and sometimes almost isodiametric in posterior part; median line fine but clearly visible in posterior half, evanescent anteriorly; 5–7 adnotaular setae on each side. Scutellum about 1·2 times as broad as long, only moderately convex in long axis, more finely sculptured than mesoscutum; submedian lines equidistant from each other and from sublateral lines, or very slightly nearer the latter, enclosing a space 2·2–2·6 times as long as broad; anterior setae usually a little shorter than posteriors and placed about in middle, posteriors slightly shorter than or equal to distance between submedian lines. Dorsellum 2·2–2·3 times as broad as long, hind edge obtusely angulate. Propodeum hardly 3 times as broad as its length at sides, narrowly and weakly emarginate, medially slightly longer than dorsellum, shiny, with fine, superficial reticulation; median carina usually distinct though not sharp, relatively thin anteriorly but widening in posterior half; spiracles oval, moderately large, nearly touching metanotum; callus with 3–6 setae. Legs of medium length; hind femora slightly more than 4 times as long as broad; tibiae slender; spur of mid tibia about 0·66 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about 2·3 times as long as broad; costal cell about as long as *M*, 9·5–10·0 times as long as broad, its lower surface with a row of setae; *SM* with 4–6 dorsal setae; *M* of medium thickness, 4·3–4·6 times length of *ST*, its front edge with 11–16 setae; *ST* slightly curved, not thin proximally, expanded from half its length to form a subrhomboidal stigma; *PM* a short stub; speculum small, hardly extending below *M*; wing beyond it moderately thickly pilose, quite thickly distad; cilia about 0·25 length of *ST*. Hindwing obtuse; cilia 0·20–0·22 breadth of wing. Gaster (Fig. 211) oblong-lanceolate, 2·5–3·0 times as long as broad, somewhat narrower than thorax, acute and slightly acuminate; last tergite nearly or just as long as broad; ovipositor sheaths projecting by a length varying from slightly less to slightly more than length of hind tibia; tip of hypopygium slightly beyond half length of gaster.

Body yellow with some tan and black markings, the black areas with a weak greenish metallic tinge. The following parts are black: ocellar triangle, greater part of occipital surface, pronotal neck and a spot just above each spiracle, often the front of each scapula and sometimes the front of mesoscutum, scuto-scutellar suture, sides of metanotum, propodeum posteriorly and around the spiracles, or mainly, often the mesosternum; upper edge of prepectus, transverse bands on the gastral tergites, sometimes united along the median line, ovipositor sheaths. The anterior part of each mesoscutal lobe, the mesopleuron, and the face and genae, tend to be suffused with tan. Antenna blackish; scape testaceous beneath, either proximally or throughout, or wholly pale except its dorsal edge; pedicellus apically, and anelli, often testaceous. Legs yellow with hind coxae often mottled with fuscous, tips of tarsi brown; in dark specimens the hind coxae are partly to mainly black, also mid coxae and less often fore coxae; rarely hind femora have a small dusky spot on their external surface near the base. Tegulae yellow. Wings hyaline, venation yellowish, slightly darker in melanistic ♀. Length of body 1·8–2·5 mm; of body plus ovipositor 2·2–3·3 mm.

♂. Malar space about 0·8 length of eye. Antenna (Fig. 496) with scape 2·6–2·7 times as long as broad, with ventral plaque about 0·22 length of scape; pedicellus plus flagellum about 1·8 times breadth of mesoscutum; pedicellus slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tending to taper very slightly distad, with F1 distinctly shorter than F2 and about 1·6 times as long as broad, F2 slightly more than twice as long as broad, F3 slightly longer than F2 and nearly 3 times as long as broad, F4 subequal in length to F3 and about 3 times as long as broad; clava hardly broader than F4, slightly longer than F3 plus F4, with C1 and C2 subequal in length, each slightly more than twice as long as broad, C3 somewhat shorter; whorled setae only moderately long, those of F1 reaching slightly beyond tip of F2. Genitalia (Fig. 607); digitus fully twice as long as broad, expanding slightly distad, with a single, moderately long and moderately oblique, hardly curved spine.

Body black with bluish and greenish metallic tints; face, genae, lower part of frons, sutures of frons and vertex, and orbits, yellow, sometimes head yellow with only ocellar triangle and occipital surface black; pronotum with two yellow spots, sometimes joined; the following parts also yellow: a triangular mark in each anterior angle of mid lobe of mesoscutum, sometimes extended along the notauli, often spots of varying size on scapulae and axillae, scutellum more or less (except usually a dark anterior spot), dorsellum and upper angle of mesopleuron. Antennal scape infuscate on dorsal and ventral edges, or wholly fuscous;

flagellum brownish with darker setae. Hind coxae black or mainly so, fore and mid coxae black proximally; in very dark males from Wadi Hindaj all coxae are black and all femora black in proximal half. Length 1·6–2·0 mm.

MATERIAL EXAMINED

8 ♂, 21 ♀. **Israel**: 2 ♂, 4 ♀, Wadi Hindaj, nr Alma-Safed, reared 21–26.iii.1937 from fruits of *Amygdalus* (*P. Jolles*), 1 ♀, Shadmot-Dvora, 11.v.1967, reared from *Eurytoma amygdali* Enderlein (*N. Plaut*), 2 ♀ 17, 18.v.1967 from same host (*N. Plaut*) (BMNH). **Turkey**: 1 ♂, 2 ♀, unlocalized, reared 1976 from fruits of *Amygdalus* sp. (*Karaman*), 5 ♂, 11 ♀, reared 27.vi.1964 from fruits of *Amygdalus communis* (*V. Ekici*) (BMNH). U.S.S.R.: 1 ♀ (paratype), Armenia, Uranots, reared 16.i.1975 from larva of *Eurytoma amygdali* Enderlein in fruit of *Amygdalus senzliana* (*Arutyunyan*) (ZI).

HOST. *Eurytoma amygdali* Enderlein in fruits of *Amygdalus* spp.

Aprostocetus (Aprostocetus) crassiceps sp. n.

(Fig. 218)

♀. Head somewhat collapsed and distorted but even so slightly broader than mesoscutum, at most twice as broad as long; eyes rather small and temples relatively long (when undistorted would probably be about 0·3 length of eyes); POL probably about twice OOL, ocelli rather small; occipital surface with a shallow median longitudinal impressed line. Eyes about 1·4 times as long as broad. Malar space 0·7 length of eye, sulcus weakly curved and with a very small fovea below eye. Mouth slightly greater than malar space. Setae of head weak, length of vertical setae less than or about equal to OD. Antenna (Fig. 218) with scape about 0·75 length of eye, not nearly reaching median ocellus; pedicellus plus flagellum 1·25 times breadth of mesoscutum; pedicellus 2·5–2·6 times as long as broad, as long as or very slightly longer than F1; funicle proximally hardly as stout as pedicellus, thickening slightly distad, with F1 about 2·7 times, F2 1·7–2·0 times, F3 about 1·5 times as long as broad; clava distinctly broader than F3, 2·0–2·5 times as long as broad, with C1 subquadrate, C2 shorter and slightly transverse, C3 very short, spine fully as long as F3, emitting a short seta just before its tip; sensilla relatively sparse, uniseriate, rather short though slender. Thorax 1·7–1·8 times as long as broad; propodeal slope about 45°. Pronotum subtriangular, half or rather more than half as long as mesoscutum, with a few short setae at sides and a row of longer ones near hind margin. Mid lobe of mesoscutum slightly broader than long, not strongly convex, only moderately shiny, with fine, very slightly raised reticulation having most areoles about 3 times as long as broad; median line absent, or indicated just near scutellum; 2–3 relatively short and weak adnotaular setae on each side, the hindmost nearly as long as anterior setae of scutellum. Scutellum slightly shorter than mesoscutum, about 1·3 times as broad as long, moderately to strongly convex, more finely sculptured than mesoscutum; submedian lines tending to converge slightly caudad, about equidistant from each other and from sublateral lines, enclosing a space 2·0–2·5 times as long as broad; anterior pair of setae short, their length hardly more than half distance between submedian lines, placed in or slightly behind middle, posterior pair somewhat longer. Dorsellum 2·0–2·5 times as broad as long, hind edge curved. Propodeum about 3 times as broad as its length at sides, moderately deeply but narrowly emarginate, medially slightly shorter than dorsellum, shiny, with fine, hardly raised reticulation; median carina slightly raised, expanded posteriorly; spiracles moderate-sized, oval, close to metanotum; callus with 2 setae. Legs of medium length, rather thick; hind coxae hardly twice as long as broad, shiny, with extremely fine, obsolescent reticulation, hind edge strongly curved; hind femora slightly more than 3 times as long as broad; spur of mid tibia 0·6 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·15–2·40 times as long as broad; costal cell as long as or a little longer than *M*, 11–12 times as long as broad, its lower surface with a row of setae; *SM* with 2–3 dorsal setae; *M* rather thick proximally but tapering distally, about 3·5 times length of *ST*, its front edge with 10–12 setae; ST at about 45°, rather thin proximally but soon expanding gradually to form a stigma which is longer than high; *PM* a stub, up to 0·3 length of *ST*; speculum rather small, extending a little way below *M*; there is also a bare area between *ST* and costal edge, and a narrow bare strip just below *ST*; cilia hardly half length of *ST*. Hindwing slightly pointed; cilia about 0·33 breadth of wing. Gaster ovate or oblong-ovate, as long as or slightly longer than head plus thorax, bluntly pointed; last tergite nearly twice as broad as long; longest seta of each cercus slightly longer than next longest; tip of hypopygium at about half length of gaster.

Body yellowish testaceous with fuscous and black markings, non-metallic. The following parts are blackish or fuscous: ocellar triangle, joined by a dark bridge over edge of occiput to a large area occupying upper half of occipital surface; hind edge of pronotum, more broadly in middle where the black colour extends on to front part of mesoscutum and sometimes to front part of pronotum; a spot on front part of each scapula, another on front part of each axilla; front and hind edges of scutellum, and its lines, more or less infuscate; metanotum sometimes brownish laterally; propodeum medially, or mainly, blackish; mesosternum infuscate, sometimes also mesopleuron; gaster with a broad transverse fuscous band on each tergite, the last tergite black; ovipositor sheaths, and distal part of gaster ventrally, infuscate. Antennae blackish, scape ventrally and tip of pedicellus testaceous. Hind coxae proximally, or mainly, infuscate; base of femora slightly brownish; legs otherwise testaceous with fore tarsi fuscous, mid and hind tarsi pale proximally but darkening to fuscous at tips. Tegulae yellow. Wings hyaline, venation testaceous or brown. Length 1·60–1·75 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **U.S.S.R.**: Moldavian SSR: Vady-lui-Vody, 29.viii.1963 (*Bouček*) (BMNH).
Paratype. **France**: 1 ♀, Vaucluse, Bédoin, 13.viii.1976 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) meridionalis sp. n.

(Figs 236, 459, 602)

[*Tetrastichus ciliatus* (Nees); Domenichini, 1966*a*: 184–185; 1966*b*: 24; Erdös, 1971: 217; Bouček, 1977: 115. Misidentifications.]

♀. Head a little broader than mesoscutum, about 2·5 times as broad as long; vertex slightly collapsed but POL probably more than twice OOL, the latter about 1·5 OD. Eyes about 1·5 times as long as broad, separated by about their length, with very short and rather sparse pubescence. Malar space about 0·6 length of eye, sulcus slightly curved. Mouth hardly greater than malar space. Setae of vertex with length nearly equal to OD. Antenna (Fig. 236) with scape distinctly shorter than eye, not nearly reaching median ocellus; pedicellus plus flagellum not quite, or only just, as great as breadth of mesoscutum; pedicellus about 1·8 times as long as broad, 1·5–1·8 times as long as F1; funicle proximally nearly as stout as pedicellus in large specimens but slightly less stout in small ones, thickening slightly distad; funicular segments subequal or increasing very slightly in length, F1 and F2 each 1·0–1·3 times, F3 1·0–1·2 times as long as broad; clava distinctly broader than F3, from somewhat longer than F2 plus F3 to as long as whole funicle, 2·0–2·2 times as long as broad, bluntly pointed, with C1 quadrate, C2 somewhat shorter and slightly transverse, C3 still shorter, spine about 0·3 length of C3, with apical seta fully as long as spine; sensilla rather sparse, uniseriate, about two-thirds as long as the segments, rather broad, decumbent; setae mostly rather short, straight. Thorax 1·5–1·7 times as long as broad; propodeal slope 45°–50°. Pronotum lunate, 0·20–0·25 length of mesoscutum. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately convex, moderately shiny, with extremely fine engraved reticulation, areoles in anterior half mostly about 3 times, in posterior half about twice, as long as broad; median line usually at least partly traceable in some lights but extremely fine, sometimes absent; usually 3 (occasionally 2 or 4) adnotaular setae on each side. Scutellum 1·1–1·3 times as broad as long; moderately strongly convex, more finely sculptured than mesoscutum, with most areoles 3–4 times as long as broad; submedian lines either about equidistant from each other and from sublateral lines or (usually) slightly nearer to the latter, enclosing a space 2·0–2·7 times as long as broad; setae equal, their length about equal to distance between submedian lines, anterior pair approximately in middle. Dorsellum about 2·5 times as broad as long, hind edge strongly curved. Propodeum hardly 3 times as broad as its length at sides, narrowly and not deeply emarginate, medially about as long as or slightly longer than dorsellum, shiny, with very fine superficial reticulation; median carina slightly raised, broadening somewhat in posterior half; spiracles small, suboval, nearly touching metanotum; callus with 2 setae. Legs of medium length, somewhat slender; hind coxae slightly more than twice as long as broad, shiny, with extremely fine and weak reticulation; fore and mid femora rather slender, hind femora about 4 times as long as broad; spur of mid tibia about 0·75 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·25–2·40 times as long as broad; costal cell distinctly shorter than *M*, 11·0–13·5 times as long as broad, its lower surface with a row of setae; *SM* usually with 4, occasionally 3, rarely 2, dorsal setae; *M* not thick, 3·7–4·9 times length of *ST*, its front edge with 8–11 setae; *ST* at 45°–50°, rather thin proximally but gradually expanding to form a moderate-sized subrhomboidal stigma; *PM* sometimes rudimentary but usually a stub up to 0·35 length of *ST*; speculum very small, hardly extending below *M*; wing beyond it moderately thickly pilose, thickly distad; cilia 0·33–0·50 length of *ST*. Hindwing acute; cilia 0·33–0·55 breadth of wing. Gaster, including ovipositor, lanceolate, 1·3–1·5 times as long as head plus thorax, about as broad as thorax, 3·0–3·7 times as long as broad, acuminate; last tergite as long as or slightly longer than broad; each cercus with two moderately long and slightly curved setae, and a third which is somewhat shorter; ovipositor sheaths exserted by a length nearly or just equal to that of postcercale (or about 0·25 length of hind tibia); tip of hypopygium slightly before half length of gaster.

Body black with weak olive, bronze and bluish metallic tints. The following parts are yellowish or testaceous: mouth-edge more or less broadly, sutures of face, sometimes orbits narrowly; upper angle of mesopleuron, scapular flanges, often dorsellum more or less, especially at sides; sides of gaster ventrally, sometimes obscure testaceous spots at sides of tergites. Antennal scape yellowish, or more or less infuscate dorsally; pedicellus brown, usually pale apically and beneath; flagellum testaceous to brown. Coxae coloured like body, fore coxae sometimes pale distally; legs otherwise yellowish with about proximal half of hind femora blackish, fore and mid femora sometimes a little darkened proximally; fore tarsi brown, mid and hind tarsi yellowish proximally gradually darkening to brown at tips. Tegulae yellow. Wings hyaline, venation testaceous to brown. Length 0·90–1·55 mm.

♂. Antenna (Fig. 459) with scape much shorter than eye, 2·0–2·2 times as long as broad, with ventral plaque about 0·5 length of scape; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 1·5–1·7 times as long as broad, slightly shorter than or as long as F1 plus F2; flagellum moderately clavate; F1 much less stout than pedicellus, shorter than the following segments, quadrate; F2 somewhat longer and broader than F1, F3 similar to F2, F4 slightly broader than F3, all these segments varying from quadrate to 1·3 times as long as broad; clava broader than F4, 2·5–2·8 times as long as broad, pointed, with prominent spine, its segments not longer than broad; flagellum without compact whorls of long dark setae. Genitalia (Fig. 602): digitus with one moderately long, slightly oblique and slightly curved spine.

Colour as in ♀ but lower half of head extensively to wholly yellow. Length 0·7–0·9 mm.

MATERIAL EXAMINED

8 ♂, 24 ♀. Holotype ♀, **France**: Bouches du Rhône, Bois de Valfère, near Rognes, 24.vii.1974 (*Graham*) (BMNH).

Paratypes. **Andorra**: 1 ♀, St Juliá de Lória, 27.viii.1980, 2 ♀, 2.ix,1980 (*S. Compton*) (HUE). **France**: 6 ♂, 4 ♀, Aveyron, St Sauveur-des-Pourcils, 5.vii.1975; 5 ♀, Bouches du Rhône, Bois de Valfère, near Rognes, 24.vii.1974; 2 ♂, 2 ♀, Lozère, Plombal, near Gatuzières, 9.vii.1977; 1 ♀, Seine et Marne, Forêt de Fontainebleau, 29.vi.1976 (*Graham*) (BMNH). **Spain**: 2 ♀, Barcelona, Calella de la Costa, vi.1971 (*Bouček*) (BMNH). **Yugoslavia**: 2 ♀, Biograd na Moru, 13.vii.1968, 1 ♀, 14.vii.1968, 1 ♀, 20.vii.1968 (*Bouček*) (BMNH).

HOST. Unknown. I have swept all my specimens from fine grasses, including *Agrostis* spp., and it probably has as host some species of Diptera: Cecidomyiidae on these.

Aprostocetus (Aprostocetus) serratularum sp. n.

(Figs 240, 244, 498, 608, 716)

[*Tetrastichus brevicornis* (Nees); Varley, 1947: 173. Misidentification.]

♀. Head at most as broad as mesoscutum (but in dried specimens often slightly less broad), about 2·5 times as broad as long; POL 1·85–2·10 OOL, OOL 1·2–1·4 OD. Eyes 1·25–1·30 times as long as broad, separated by about 1·2 times their length. Malar space about 0·66 length of eye, sulcus slightly curved. Mouth hardly greater than malar space. Head with several punctures in ocellar triangle and on upper part of sides of frons; setae of vertex with length hardly less than OD. Antenna (Fig. 240) with scape 0·7–0·8 length of eye, not reaching median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; anelli (Fig. 716); pedicellus 2·0–2·2 times as long as broad, slightly shorter than or as long as F1; funicle proximally slightly stouter than pedicellus, thickening somewhat distad, its segments decreasing slightly in length or subequal, F1 1·4–2·0 times, F2 1·2–1·6 times, F3 1·2–1·4 times as long as broad; clava somewhat broader than F3, about as long as F2 plus F3, 2·0–2·3 times as long as broad, with C1 occupying half the total length and quadrate or slightly elongate, C2 and C3 progressively shorter, spine very short, apical seta slightly longer than spine; sensilla moderately numerous, in one irregular row on each segment, about half as long as the segments, decumbent or nearly so; setae of flagellum pale, very short, standing out only slightly. Thorax 1·4–1·5 times as long as broad; propodeal slope about 50°. Pronotum rather short, lunate, setose except for a broad median stripe. Mid lobe of mesoscutum as broad as or slightly broader than long, only slightly shiny, with extremely to excessively fine superficial reticulation having areoles 2–4 times as long as broad; median line fine but moderately distinct; a row, sometimes irregular, or double anteriorly, of 5–8 pale adnotaular setae on each side. Scutellum 1·15–1·30 times as broad as long, moderately convex, more finely sculptured than mesoscutum; submedian lines equidistant from each other and from sublateral lines, or slightly nearer the latter, enclosing a space 2·0–2·5 times as long as broad; setae subequal, pale, their length slightly less than distance between submedian lines, anterior pair in or somewhat behind middle. Dorsellum 2·2–2·5 times as long as broad, hind edge curved or obtusely angulate. Propodeum narrowly and weakly emarginate, medially as long as or slightly longer than dorsellum, shiny, with extremely fine, obsolescent reticulation; median carina vague, sometimes only a shiny and hardly raised strip, foveate anteriorly; spiracles moderate-sized, oval, close to metanotum; callus with 4–7 setae. Legs of medium length and thickness; hind coxae oblique, about twice as long as broad; hind femora slightly more than 4 times as long as broad; spur of mid tibia 0·85–0·95 length of basitarsus. Forewing (Fig. 244) 2·1–2·2 times as long as broad; costal cell as long as or slightly longer than *M*, 8–10 times as long as broad, its lower surface with a row of setae, sometimes irregular or partly double; *SM* with 4–7 dorsal setae; *M* rather thick, 3·0–3·5 times length of *ST*, its front edge with 13–16 rather short setae; *ST* at 45°–50°, rather thin at base but rapidly expanding to form a moderate-sized, usually subrectangular stigma; *PM* a short stub or rudimentary; speculum moderate-sized, extending as a narrow wedge below *M*; wing just beyond it, and below stigma, tending to be rather sparsely pilose, otherwise more densely so; often a small bare area abuts *ST*; cilia 0·15–0·33 length of *ST*. Hindwing obtuse; cilia 0·14–0·16 breadth of wing. Gaster long-ovate, as long as or somewhat longer than head plus thorax, usually as broad as thorax, 1·75–2·50 times as long as broad, acute and slightly acuminate; last tergite as long as or slightly longer than broad; ovipositor sheaths projecting slightly; cercal setae pale, subequal, hardly curved; tip of hypopygium at about half length of gaster.

Body black with blue to green or olive-green metallic tints, with yellow markings of variable extent, southern European specimens tending to be paler. Yellow markings are as follows. Head: in dark forms a square spot on each side of face, touching malar sulcus but not reaching eyes, sometimes joined, the clypeus sometimes pale; often inner orbits; in pale forms the yellow spreads until only the ocellar triangle, middle of frons, and most of occipital surface, remain black. Thorax: in darkest forms only upper angle of mesopleuron yellow, but most often dorsellum is laterally or wholly yellow; often a yellow spot on each side of pronotum, anterior angles of mid lobe of mesoscutum, scapular flanges. In progressively paler forms, a pair of yellow spots at posterior edge of mid lobe of mesoscutum, which may join and extend along notauli to join the spots in the anterior angles; the yellow pronotal spots extend to form a band, the scutellum becomes partly to mainly yellow, the posterior part of scapulae and axillae becomes yellow, whilst the prepectus becomes yellow ventrally. Gaster: either wholly black, or (often) with a row of yellow sublateral spots on ventral surface, occasionally joined to form two longitudinal bands; in paler forms last tergite often has a yellow spot, whilst some or most of the preceding tergites may have a pair of sublateral spots, the more posterior ones sometimes united to form transverse bands. Legs: hind coxae black, mid coxae usually, fore coxae often, more or less black; fore femora sometimes yellow but usually all femora narrowly to broadly black in proximal half; in very dark northern forms mid and hind tibiae are sometimes slightly infuscate along their inner edges, or have a fuscous median band. Tegulae yellow anteriorly, or wholly so. Wings very clear, or with a slightly milky appearance, venation pale yellow. Antennal scape and pedicellus black with metallic tint, radicula sometimes yellow; flagellum fuscous to black. Length 1·6–2·6 mm.

♂. Antenna (Fig. 498) with scape about 0·8 length of eye, 2·50–2·65 times as long as broad, reaching median ocellus, with ventral plaque 0·43–0·50 length of scape; pedicellus plus flagellum 1·60–1·73 breadth of mesoscutum; pedicellus 1·50–1·65 times as long as broad, as long as or hardly longer than F1; funicle proximally distinctly stouter than pedicellus, filiform; F1 somewhat shorter than F2 and quadrate or nearly so; following segments subequal in length, F2 1·45–1·65 times, F3 1·60–1·75 times, F4 1·65–1·90 times as long as broad; clava not broader than funicle, slightly to considerably longer than F3 plus F4, 4·0–4·6 times as long as broad, with C1 and C2 somewhat longer than broad, C3 much shorter; whorled setae moderately long, those of F1 reaching nearly to tip of F3. Genitalia (Fig. 608).

Body with less extensive yellow markings than in ♀, at most the face, orbits, upper angle of mesopleuron, dorsellum, and sometimes spots on pronotum, front angles of mid lobe of mesoscutum, and hind edge of scutellum, yellow. Tibiae sometimes more heavily infuscate.

MATERIAL EXAMINED

14 ♂, 27 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 29.iv.1972, reared from *Terellia serratulae* (L.) in inflorescences of *Cirsium lanceolatum* (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♂, 4 ♀, Bohemia, Mšené Lázně, from heads of *Carduus nutans*, 25.viii.1954, 3 ♂, 8 ♀, reared viii.1954–vii.1955 (*Bouček*); 1 ♀, Praha, vi.1952, from *Urophora solstitialis* (L.) on *Cirsium* sp.; 1 ♀, Velký Vřešťov, viii.1953 (*Bouček*) (BMNH). **France**: 1 ♀, Basses Alpes, Col des toutes Aures, 17.vii.1975 (*Gijswijt*) (MJG). **Great Britain**: 1 ♂, England, Middlesex, Southgate, 17.iv.1972, 1 ♂, 23.iv.1972, 2 ♂, 1 ♀, 26.iv.1972, 1 ♀, 29.iv.1972, 2 ♀, 10.v.1972, all from *Terellia serratulae* (L.) in heads of *Cirsium lanceolatum* (*Graham*) (BMNH); 3 ♀, Cambridgeshire, Wicken Fen, 12.vi.1934, from heads of *Centaurea nigra*, 3 ♂, 2 ♀, 29.iii.1954, from *Urophora jaceana* (Hering) (*G. C. Varley*) (UM). **Greece**: 1 ♀, Kikladés, Mikonos, Psaroú, 19.iv.1974 (*A.C. & W. N. Ellis*) (ITZ). **Italy**: 1 ♀, Aosta, Quart, 13.ix,1969 (*Bouček*) (BMNH).

HOSTS. *Urophora solstitialis* (L.), *Terellia serratulae* (L.) and *Urophora jaceana* (Hering).

COMMENTS. The species of *Centaurea* from which Varley's specimens were reared is noted on his labels as *nigra*. However, he informed me that it was really *nemoralis* (now regarded as a subspecies of *debauxii*, see *Flora Europaea* **4**: 293–294).

Aprostocetus (Aprostocetus) rumicis sp. n.

(Figs 239, 500)

Tetrastichus sp. near *tompanus* Erdös; Williams, 1969: 131–133, figs 10–15.

♀. Differs from those of *serratularum* and *venustus* in the characters given in the key to females, couplet 44. Antenna (Fig. 239) with scape about 0·85 length of eye, just reaching lower edge of median ocellus; pedicellus 2·2–2·4 times as long as broad, at least very slightly shorter than F1; funicle proximally very slightly stouter than pedicellus, thickening slightly distad, its segments tending to decrease very slightly in length, F1 2·0–2·3 times, F2 1·6–1·8 times, F3 1·3–1·5 times as long as broad; clava slightly broader than F3, nearly or just as long as F2 plus F3, pointed, with C1 slightly longer than broad and occupying nearly half the total length, C2 and C3 progressively much shorter, spine as in *serratularum*; sensilla moderately numerous, in one row (irregular on funicular segments and on C1), of moderate length, rather slender, decumbent with hardly developed blades; setae mostly short and nearly straight, standing out somewhat. Mid lobe of mesoscutum with 4–6 adnotaular setae on each side. Propodeal callus usually with 3 (sometimes 4 or 5) setae. Forewing: *M* 3·7–4·6 times length of *ST*.

Body black with moderately strong green to blue-green tints and with yellow markings as follows: a large spot on each side of clypeus, extending to malar sulcus, more often these spots joined across the clypeus; or whole face below toruli yellow; most often inner orbits, in paler specimens also a transverse line on vertex behind lateral ocelli, and the outer orbits more or less. Thorax: yellow are upper angle of mesopleuron; nearly always sides of dorsellum or its whole surface; usually a pair of spots at hind edge of mid lobe of mesoscutum, often joined, in pale specimens covering the posterior half of the sclerite, often a pair of spots in front angles of this sclerite, sometimes spreading along notauli and uniting with the posterior spots; sometimes small to large sublateral spots on pronotum. In very pale specimens the prepectus dorsally, and the posterior part of the scutellum, are more or less yellow. Gaster: basal tergite most often with a pair of yellow sublateral spots; in paler specimens up to five of the proximal segments may have similar spots, in very pale specimens the spots of the basal segment enlarge and almost unite; gaster ventrally with yellowish sublateral spots on basal segment and often on additional segments, the spots sometimes joined to form 2 longitudinal bands. Antenna fuscous to black; radicula, sometimes tip of scape and tip of pedicellus very narrowly yellowish. Legs yellow with at least hind coxae black, mid and fore coxae often more or less so; at least hind femora with a black mark at base, most often all femora black at base or up to half their length; fore tarsi brownish, mid and hind tarsi becoming brown apically. Tegulae yellow, or dark posteriorly. Wings hyaline, venation yellowish. Length 1·50–2·05 mm.

♂. Differs from those of *serratularum* and *venustus* in the characters given in the key to males, couplet 64. Antenna (Fig. 500).

MATERIAL EXAMINED

3 ♂, 20 ♀. Holotype ♀, **Great Britain**: Berkshire, Windsor Forest, 8.vi.1976, swept from *Rumex acetosa* (*Graham*) (BMNH).

Paratypes. **France**: 2 ♂, Aveyron, La Pezade, 12.vii.1977; 1 ♀, Bouches du Rhône, Fonscolombe, 7.vi.1982; 1 ♂, Vaucluse, Combe de Veaux, near Malaucène, 23.vii.1978 (*Graham*) (BMNH). **Great Britain**: 1 ♀, Berkshire, Silwood Park, 14.viii.1963, 1 ♀, 30.ix.1963, reared from *Apion* sp. in stem of *Rumex* (*P. Williams*) (BMNH); 11 ♀, Berkshire, Windsor Forest, 8.vi.1976 (*Graham*) (BMNH); 1 ♀, Middlesex, Southgate, 6.vii.1966, 1 ♀, 19.vi.1967, 1 ♀, 28.vi.1967 (*Graham*) (BMNH). **Netherlands**: 1 ♀, Hilversum, 19.v.1974 (*Gijswijt*) (MJG); 1 ♀, Noord Brabant, Herpen, 19.viii.1965 (*S. van Heijnsbergen*) (MJG).

Hosts. *Apion curtirostre* Germar and *A. violaceum* Kirby in stems of *Rumex acetosa*, ectoparasitic on the host larvae (Williams, 1969). The egg and larva of the present species were described and figured by Williams (1969).

Aprostocetus (Aprostocetus) venustus (Gahan) **comb. n.**

(Figs 241, 245, 609)

[? *Eulophus brevicornis* Panzer; Nees, 1834: 163. Misidentification.]
Tetrastichus venustus Gahan, 1914: 168; Burks, 1943: 576–577 (♀); Peck, 1951: 450; 1963: 154–155; Burks, 1979; 1002. Holotype ♀, U.S.A.: California, Corcoran (*T. D. Urbahns*) (USNM) [examined].
[*Tetrastichus brevicornis* (Nees); Nikol'skaya, 1933: 124–125. Misidentification.]
[*Tetrastichus eurytus* (Walker); Szelényi, 1941: 411–412. Misidentification.]
[*Geniocerus eurytus* (Walker); Erdös, 1954: 355. Misidentification.]
Tetrastichus aneurytus Erdos, 1969: 44, 1971: 230. [Replacement name for *eurytus* auctorum.] **Syn. n.**

Through the kind co-operation of Eric Grissell, I was able to examine the holotype ♀ and two paratypes ♀ of *Tetrastichus venustus*. Fig. 241 (antenna) and Fig. 245 (forewing) are drawn from the holotype.

This species has several times been misidentified. Nikol'skaya (1933) used the name *brevicornis* (Nees) for it; however, the Nees name is invalid, being a misidentification of the earlier *brevicornis* (Panzer). Burks (1943: 577) remarked of *venustus* 'This species may be a synonym of the European species, *T. brevicornis* (Panzer). Nikol'skaya held the same opinion'. As the name *brevicornis* (Nees) is invalid, *venustus* Gahan can be used for the present species.

The material reared from lucerne seed-pods, referred to *eurytus* (Walker) by Szelényi (1941), was destroyed in 1945 (Szelényi, pers. comm.). Szelényi later reared, from seeds of the same plant, other material which I was able to examine. I have also examined the material in the Erdös collection (TM) which Erdös referred to *aneurytus*.

♀. Head as in *serratularum*. Antenna (Fig. 241) with scape as in *serratularum*; pedicellus 1·75–2·20 times as long as broad, from hardly shorter, to very slightly longer, than pedicellus; clava 1·9–2·4 times as long as broad, not quite or just as long as F2 plus F3. Mid lobe of mesoscutum with 3–6 adnotaular setae on each side. Propodeal callus with 3–4 (–5 in one specimen) setae. Forewing (Fig. 245) with *M* 3·1–3·5 times length of *ST*. Other structural features as in *serratularum*.

Body coloured as in *rumicis* but normally with more extensive yellow markings. Head with at least the whole face, inner and outer orbits, lower part of genae, and a transverse band on vertex, yellow; sometimes the whole head yellow except the ocellar triangle and middle of occipital surface. Thorax in dark specimens with yellow markings as in the palest examples of *rumicis*, but prepectus wholly yellow or at most dark ventrally, dorsellum wholly yellow; in paler specimens the scutellum is yellow posteriorly, or mainly with only a dark anterior median spot, or wholly yellow. The yellow pronotal spots sometimes join, the scapular flanges and the outer part of the scapulae may become yellow, whilst yellow spots sometimes appear on the inner part of each axilla. Occasionally the sides of the propodeum, mesopleuron and prosternum are more or less yellow. The gaster dorsally is sometimes coloured as in dark specimens of *rumicis* but most often has several yellow sublateral spots which tend to be more conspicuous on the 2 or 3 posterior tergites; in pale specimens the last tergite is sometimes wholly yellow and the spots of the preceding tergite or tergites joined to form transverse bands. Ventrally the gaster is more richly yellow-marked than in *rumicis*, sometimes mainly yellow. Legs sometimes wholly yellow, more often with hind coxae more or less black; hind femora often more or less black proximally or up to half their length, fore and mid femora sometimes black proximally. Length 1·1–2·0 mm.

♂. Differs from ♂ of *rumicis* only in the characters noted in the key to males, couplet 64. Genitalia (Fig. 609).

Material examined

10 ♂, many ♀. **Canary Is.**, **Czechoslovakia**, **France**, **Germany**, **Hungary**, **Spain**, **Yugoslavia**, **U.S.S.R.**, **U.S.A.**

Hosts. *A. venustus* has frequently been reared from seeds of *Medicago sativa* (lucerne or alfalfa) both in Europe and the U.S.A., also from seeds of *Onobrychis* in Europe. Burks (1979: 1002) stated 'exact host not established'. Szelényi (1941) considered that the host in lucerne-seeds was *Bruchophagus gibbus* (Boheman), which was no doubt *Bruchophagus roddi* (Gussakovskii), a species associated with lucerne; *B. gibbus* is now known to be attached to clovers. Erdös (1969: 44; 1971: 230) mentioned *Eurytoma* (= *Bruchophagus*) *roddi* and *E.* (= *B.*) *onobrychidis* (Nikol'skaya) as hosts. Further research is desirable to determine the exact host-relationships.

Comments. Burks (1943: 576) stated that the male of *venustus* was 'usually almost entirely iridescent brownish green'. All the males I have examined are obviously yellow-marked. I have seen another species reared from *Medicago sativa*, the male of which is not yellow-marked; the males referred to *venustus* by Burks may belong to this other species.

Aprostocetus (Aprostocetus) biorrhizae (Szelényi) **comb. rev.**

(Figs 242, 243)

Tetrastichus biorrhizae Szelényi, 1941: 412–414. Holotype ♀, Hungary: Budapest, Svábhegy, iii.1933 (*Szelényi*) (TM) [examined].
Geniocerus biorrhizae (Szelényi) Erdös, 1954: 354.
Aprostocetus biorrhizae (Szelényi) Graham, 1961*b*: 50.
Tetrastichus biorrhizae Szelényi; Domenichini, 1966*a*; 144; 1966*b*: 20; Erdös, 1971: 228; Kostjukov, 1978*b*: 444.

♀. Head slightly broader than mesoscutum, about 2·5 times as broad as long; POL about 1·8 OOL, OOL about 1·6 OD. Eyes as in *serratularum*. Malar space about 0·7 length of eye, sulcus slightly curved, with minute fovea. Mouth about 1·2 malar space. Antennae (Fig. 243) with scape about 0·85 length of eye, not nearly reaching median ocellus; pedicellus plus flagellum 1·10–1·22 breadth of mesoscutum; pedicellus 1·80–2·35 times as long as broad, very slightly shorter than F1; funicle proximally distinctly stouter than pedicellus, thickening very slightly distad, its segments decreasing a little in length, F1 1·6–2·0 times, F2 1·40–1·75 times, F3 1·25–1·45 times as long as broad; clava somewhat broader than F3, as long as or hardly longer than F2 plus F3, 1·9–2·2 times as long as broad, with C1 as long as or slightly longer than broad, C2 and C3 progressively shorter, spine about 0·2 length of C3. Thorax 1·55–1·65 times as long as broad; propodeal slope 50°–60°. Pronotum short. Mid lobe of mesoscutum about as broad as long, moderately convex, rather dull, with excessively fine superficial reticulation having most areoles 2–3 times as long as broad; median line often more or less indicated in posterior half but sometimes obsolescent; 4–5 adnotaular setae on each side. Scutellum slightly broader than long, moderately convex, a little more finely sculptured than mesoscutum; submedian lines placed as in *serratularum*, enclosing a space 2·4–2·7 times as long as broad; setae equal, their length 0·7–0·8 distance between submedian lines, anterior pair usually slightly behind, rarely in the middle. Dorsellum and propodeum as in *serratularum*; propodeum usually a little longer than, sometimes only as long as, dorsellum, shiny, with extremely fine superficial reticulation; median carina fine; callus with 3–6 setae. Hind coxae slightly more than twice as long as broad, shiny, with extremely fine superficial reticulation; hind femora 4·5–5·0 times as long as broad; spur of mid tibia slightly shorter than basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·05–2·25 times as long as broad; costal cell slightly shorter than *M*, 9·0–11·5 times as long as broad, lower surface with row of setae; *SM* with 3–5 dorsal setae; *M* rather thin, 3·0–4·0 times length of *ST*, its front edge with 11–15 setae; *ST* at about 60°, rather thin proximally, expanding slightly distad to form a small stigma; *PM* rudimentary, or a short stub; speculum moderate-sized, extending as a narrow wedge below *M* nearly to *ST*, closed below or open at extreme base; wing beyond it moderately thickly pilose, more thickly distad; cilia 0·25–0·35 length of *ST*. Hindwing obtuse or subobtuse; cilia 0·15–0·35 breadth of wing. Gaster (Fig. 242) short-ovate, at most as long as thorax, usually slightly broader than thorax, 1·4–1·8 (–2·0) times as long as broad, acute and sometimes very slightly acuminate; last tergite short, 1·5–2·5 times as broad as long; ovipositor sheaths usually projecting very slightly, sometimes by as much as 0·3 length of last tergite; tip of hypopygium at or hardly beyond half length of gaster.

Body black with distinct bluish to greenish blue tints; disc of gaster extensively bronze; the following parts yellow: clypeus, lower part of genae, sides of face, sides or whole of dorsellum, upper angle of mesopleuron, scapular flanges, often a spot in each anterior angle of mid lobe of mesoscutum, in paler specimens each spot extending along the notaulus; sometimes orbits, in very pale specimens also the genae and almost whole face, yellow; occasionally there are irregular yellow marks on sides of pronotum and rarely hind edge of scutellum. Antennae black. Coxae black, legs otherwise yellow with fore femora usually black at base, mid and hind femora with proximal third to half back; fore tarsi brown to fuscous, fourth (and occasionally third) segment of mid and hind tarsi brown. Tegulae yellow, hind edge sometimes brown. Wings hyaline, venation yellowish to brown. Length 1·4–1·9 mm.

♂. Unknown.

MATERIAL EXAMINED

18 ♀. **France**: 1 ♀, Vaucluse, Brantes, 29.iv.1975; 1 ♀, Mont Ventoux, Col de Perrache, 6.vi.1980; 14 ♀, Beaumont-du-Ventoux, 29.iv.–25.v.1980, all reared from galls of *Biorhiza pallida* (Olivier) on *Quercus pubescens* (*Graham*) (BMNH). **Hungary**: 1 ♀ (holotype), Budapest, Svábhegy, iii.1933 (*Szelényi*); 1 ♀, Matra, 27.vi.1952 (*Erdös*) (TM).

Also recorded from **Austria** and **Italy** (Domenichini, 1966*a*: 144).

HOST. Possibly some inquiline in the gall of *Biorhiza pallida* (Olivier).

The *lycidas*-group

Antenna with 4 anelli in ♀, 3 in ♂; with 3 funicular segments in ♀, 4 in ♂; clava normally 3-segmented but the second and third segments in ♀ often indistinctly separated; rarely (*gratus*) the clava apparently unsegmented: row of setae on front margin of ♀ scape (not counting the subapical seta) usually extending to above the middle. Except in *flavifrons*, *nubigenus* and *domenichinii*, each segment of the ♂ funicle bears a compact subbasal whorl of long dark setae which reach at least nearly to the tip of the segment which bears them, but nearly always beyond (usually far beyond) this; ♂ scape with ventral plaque in most species placed mainly to wholly in upper half, though extending most of the length of the scape in *orithyia* and *calamarius*. Mesoscutum moderately to conspicuously shiny, with delicate, engraved or occasionally superficial reticulation which is usually excessively fine (Figs 278–280); nearly always with 1 row of adnotaular setae on each side (with 2 rows in some *xanthopus*). Digitus of ♂ genitalia with a single spine (or occasionally a short tooth) on its hind margin. One seta of each cercus 1·3–2·0 times as long as the next longest seta and usually more or less kinked or sinuate about the middle of its length, usually dark. Submedian lines of scutellum nearly always distinct, rarely very weak or absent. Median length of propodeum in ♀ usually about equal to length of dorsellum, occasionally slightly greater, rarely a little less. Body most often non-metallic, sometimes weakly metallic, occasionally (*orithyia* and related species) strongly metallic. Propodeum shiny, with fine reticulation which is generally weak or obsolescent, rarely moderately strong; spiracles, unless otherwise stated, moderate-sized, oval, very close to metanotum, the outer part of their rim partly covered by a raised flap of the callus (Figs 54, 71, 91–93, 294–295, 396); callus in most species with 2 setae placed laterad of the spiracle (with 3 or more in *strobilanae*, *pachyneuros*, *grylli*, *rufiscapus*, *incrassatus*, *escherichi*, *neglectus*, *coccidiphagus* and some *phineus*). Spur of mid tibia normal, in ♀ with its length either more than half length of basitarsus or, if the latter is elongate, then distinctly greater than the breadth of the tibia; in ♂ with its length greater than breadth of tibia. Mesosternum, in front of the trochantinal lobes, flat or nearly so, nearly always of moderate length (very short in *constrictus*, *rufiscapus and verticalis*). Hind coxae with engraved or superficial reticulation except in *boreus* where it is slightly raised. Head in front view slightly broader than high (except in *metra*), subtrapeziform with vertex slightly to moderately convex, genae converging moderately and slightly curved or straight. Eyes, unless otherwise stated, with extremely short and sparse pubescence. Pronotum usually very short or short, rarely as much as one-third length of mesoscutum, with a row of setae near hind margin and some shorter setae at sides. Scapulae nearly always deeply excised posteriorly, with flanges elongate-triangular to sublinear; rarely somewhat less deeply excised and with flanges more broadly triangular (*glandicola*, some species of *fulvipes*-complex). Forewing: costal cell with a row of setae on its lower surface; speculum closed below. Gaster of ♀ very variable in shape; ovipositor sheaths occasionally not projecting but usually projecting slightly to very far, the setae clothing them usually forming a slight subapical tuft, as seen in dorsal view. Gaster of ♂ most often oblong or sublinear, nearly as long as but narrower than thorax, with a ventral plica.

HOSTS. Most often Diptera: Cecidomyiidae, rarely Agromyzidae; occasionally Hymenoptera: Cynipidae, Hemiptera: Coccidae, leaf-mining Lepidoptera or Coleoptera; rarely other Coleoptera, or parasitic Hymenoptera.

This is the largest of all the species-groups of *Aprostocetus* and is found in all zoogeographical regions. Possibly it needs further subdivision as a few species are slightly discordant elements, such as *xanthopus*, *neglectus*, *calvus*, and the *ceroplastae*-complex.

Aprostocetus (Aprostocetus) orithyia (Walker)

(Figs 250, 251, 463, 610, 679, 717)

Cirrospilus Orithyia Walker, 1839*b*: 352. Lectotype ♀, GREAT BRITAIN (BMNH), designated by Graham (1961*b*: 49) [examined].

Tetrastichus arundinis Giraud, 1863: 1274. Lectotype ♂, FRANCE (*Giraud*) (MNHN), designated by Domenichini (1966*a*: 141–142) [examined]. **Syn. n.**

[*Tetrastichus xanthops* Ratzeburg; Thomson, 1878: 287; Kurdjumov, 1913: 248. Misidentifications.]

Aprostocetus arundinis (Giraud) Graham, 1961*b*: 49.

Tetrastichus arundinis Giraud; Domenichini, 1966*a*: 141; 1966*b*: 19; 1967: 89; Erdös, 1971: 243–244; Kotjukov, 1978*b*: 452.

♀. Head 1·20–1·35 times as broad as mesoscutum; POL 1·00–1·35 OOL, OOL 2·4–2·7 times OD. Lateral ocelli connected to eyes by a more or less distinct grooved line. Eyes 1·20–1·25 times as long as broad, separated by about 1·25 times their length. Malar space slightly more than half length of eye, sulcus weakly curved, not foveate or with at most a minute fovea. Mouth about 1·25 malar space. Length of setae of vertex equal to OD. Antenna (Fig. 250) with scape about as long as eye, reaching somewhat above vertex; pedicellus plus flagellum 1·7–1·9 times breadth of mesoscutum; pedicellus 2·3–2·6 times as long as broad, about 0·75 length of F1; anelli (Fig. 717); funicle slender, proximally hardly as stout as pedicellus and hardly thickening distad; F1 3·0–5·0 times, F2 3·0–3·5 times, F3 2·8–3·0 times as long as broad; clava slightly broader than F3, its length equal to F3 plus half to two-thirds of F2, obtuse in large females, pointed in small ones, with C1 1·7–2·0 times as long as broad, C2 at least slightly longer than broad, spine nearly as long as C3, with 1–2 very short apical setae; sensilla moderately numerous and moderately long, some of the proximal ones on each segment with short bases and long, somewhat outstanding, blades. Thorax 1·4–1·5 times as long as broad; propodeal slope about 45°. Pronotum subconical, 0·3–0·4 length of mesoscutum. Mid lobe of mesoscutum as broad as or hardly broader than long, moderately convex, moderately shiny, reticulation excessively fine, hardly engraved, with most areoles twice as long as broad or less; median line absent; 3–5 adnotaular setae on each side. Scutellum (Fig. 251) as broad as or slightly broader than long, moderately strongly convex, sculptured like mesoscutum; submedian lines parallel or diverging only slightly caudad, slightly nearer to sublateral lines than to each other; setae fine, subequal, their length hardly as great as distance between submedian lines, anterior pair about in middle. Dorsellum 1·8–2·2 times as broad as long. Propodeum narrowly and not deeply emarginate, medially about as long as dorsellum, moderately shiny, with fine reticulation which tends to be very slightly raised; median carina slightly raised, broadening caudad; spiracles oval, separated by about 0·33 their length from metanotum; callus with 2–4 setae. Legs of medium length and thickness; hind coxae about twice as long as broad, sculpture rather weaker than that of propodeum; hind femora about 3·8 times as long as broad; spur of mid tibia 0·75–0·80 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·4–2·6 times as long as broad; costal cell distinctly shorter than *M*, 14–16 times as long as broad, upper surface with 2–5 setae at apex, lower surface with row of setae which is sometimes irregular or double in distal part of cell; *SM* with 3–8 dorsal setae; *M* not thick, 4·3–5·0 times length of *ST*, its front edge with 12–20 setae; *ST* at 45°, thin proximally but expanding beyond middle to form a small suboblong stigma; *PM* a short stub or rudimentary; speculum absent or virtually so, wing beyond it rather densely and uniformly pilose; cilia 0·30–0·55 length of *ST*. Hindwing subobtuse or bluntly pointed; cilia 0·3–0·4 breadth of wing. Gaster sublanceolate or long-ovate, usually somewhat longer than head plus thorax but only about as long in some aberrant specimens, as broad as or somewhat broader than thorax, acute and often slightly acuminate; last tergite varying from slightly broader than long to slightly longer than broad; ovipositor sheaths projecting very slightly; longest seta of each cercus fully twice length of next longest, kinked; tip of hypopygium at about 0·4 length of gaster. Hypopygium (Fig. 679).

Body black with moderately strong green, blue-green or bronze-green metallic tints (weaker on gaster). The following parts testaceous: at least mouth-edge broadly, sometimes whole lower half of head, occasionally also orbits narrowly; prosternum, sometimes sides of pronotum; upper angle of mesopleuron; occasionally base of gaster ventrally more or less, rarely also testaceous at base dorsally. Legs testaceous with proximal half to three-quarters of hind coxae dark; pretarsi and claws brownish, often also fourth tarsomere; sometimes tarsi are pale at base only and darken gradually to tips. Some dark Irish specimens have mid coxae more or less infuscate proximally. Tegulae testaceous, hind edge sometimes darkened. Wings subhyaline or faintly yellowish, venation testaceous to brownish. Length 1·6–2·8 mm.

♂. Antenna (Fig. 463) with scape slightly longer than eye, reaching well above vertex, 3·3–3·5 times as long as broad, ventral plaque very long; pedicellus plus flagellum 2·4–2·7 times breadth of mesoscutum;

pedicellus 2·0–2·1 times as long as broad, 0·6–0·7 length of F1, with a very long curved apical seta arising from its mesal surface, and 1–3 moderately long setae just before it; funicle proximally about as stout as pedicellus, tending to taper very slightly distad; F1 slightly shorter than F2 and 2·0–2·3 times as long as broad, following segments subequal in length, each on average about 3 times as long as broad; clava about as long as F3 plus F4, 6·0–7·5 times as long as broad; whorled setae long, those of F1 reaching about to middle of F3. Gaster without a ventral plica. Genitalia (Fig. 610) about half as long as gaster.

Colour as ♀ but gaster wholly dark.

MATERIAL EXAMINED

Many ♂, ♀. **Austria**, **Czechoslovakia**, **Denmark**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Netherlands**, **Sweden**, **U.S.S.R.**

HOSTS. *Giraudiella inclusa* (Frauenfeld), *Lasioptera arundinis* (Schiner); *Lipara lucens* Meigen.

COMMENTS. This species is sometimes abundant in relatively undisturbed stands of reed (*Phragmites australis*) upon which its hosts are found.

The courtship behaviour of *orithyia* has been observed (under the name *arundinis*) by Van den Assem *et al.* (1982*a*: 207–208).

Aproztocetus (Aprostocetus) longiscapus (Thomson) **comb. rev.**

(Figs 249, 252, 488)

Tetrastichus longiscapus Thomson, 1878: 287. Lectotype ♂, SWEDEN: Stockholm (ZI), designated by Graham (1961*b*: 49) [examined].

Aprostocetus longiscapus (Thomson) Graham, 1961*b*: 49.

Tetrastichus longiscapus Thomson; Domenichini, 1966*a*: 141; 1966*b*: 38; Kostjukov, 1978*b*: 452.

♀. Differs from ♀ of *orithyia* in the characters given in the key to females, and as follows. POL 1·0–1·1 times OOL, OOL 2·7–3·0 times OD. Antenna (Fig 249) with pedicellus 0·45–0·50 length of F1; funicular segments tending to be longer, F1 5·5–5·7 times, F2 4·0–4·5 times, F3 3·0–3·5 times as long as broad. Forewing with costal cell 11·5–12·0 times as long as broad; *M* 5·3–5·8 times length of *ST*. Propodeal callus with 8–9 setae. Mesoscutum and scutellum (Fig. 252).

Dark parts of body with only a weak olive to bronze metallic tinge; sides of pronotum, prepectus, upper angle of mesopleuron testaceous, in paler forms the whole pleuron, sides of scapulae, mid lobe of mesoscutum partly to wholly, axillae, sides of metanotum and of propodeum, venter and at least base of dorsal surface of gaster, sometimes sides of last tergite. Antennal scape testaceous, more or less infuscate dorsally and sometimes also distally; pedicellus usually testaceous beneath and at tip; flagellum blackish. Legs including all coxae testaceous or pale testaceous, only pretarsi and claws dark. Wings faintly yellowish, venation yellowish or pale testaceous. Length 1·9–2·7 mm.

♂. Antenna (Fig. 488) with scape reaching well above vertex, its ventral plaque short and placed wholly in upper half of scape; other details as in the figure and couplet 53 of key to males; further characters in the same couplet.

MATERIAL EXAMINED

1 ♂, 5 ♀. **Czechoslovakia**: 1 ♀, Bohemia, Doksy, Břehyně, 9.viii.1957 (*Bouček*) (BMNH). **Hungary**: 1 ♀, Gárdony, 18.v.1955 (*Erdös*) (TM). **Sweden**: 1 ♂, 3 ♀ (syntypes) (ZI).

HOST. The ♀ taken in Hungary by Erdös is labelled as having been reared from *Lasioptera arundinis* (Schiner).

COMMENT. This apparently rare species may be expected to occur in old, undisturbed stands of *Phragmites australis*.

Aprostocetus apiculatus **sp. n.**

(Figs 254, 719)

♀. Head about 1·25 times as broad as mesoscutum, 2·05–2·20 times as broad as long; temples 0·10–0·15 length of eyes, strongly convergent; POL hardly greater than OOL, OOL 2·2–2·8 times OD. Eye about

1·25 times as long as broad, front edge strongly curved, hind edge very shallowly emarginate; separated by slightly more than their length; with very short sparse pubescence. Malar space nearly or just 0·5 length of eye; sulcus nearly straight, with a very small triangular fovea below eye. Mouth about 1·5 times malar space. Head rather shiny, with extremely fine and delicate, superficial reticulation. Vertical setae about =OD. Antenna (Fig. 254): scape distinctly shorter than eye, 3·5–3·7 times as long as broad, reaching about middle of ocellus; pedicellus plus flagellum 1·4–1·5 breadth of mesoscutum; pedicellus fully twice as long as broad, somewhat shorter than first funicular segment; anelli (Fig. 719); funicle proximally not stouter than pedicellus, hardly thickening distad, with F1 somewhat longer than F2 and 2·5–3·0 times as long as broad, F2 about twice as long as broad, F3 hardly shorter than F2 and 1·8–2·0 times as long as broad; clava hardly broader than funicle, 3·4–3·8 times as long as broad, as long as funicular segments 2 plus 3, slightly pointed, its first segment hardly longer than broad and occupying about 0·35 the whole length, second slightly shorter and as long as broad, third still shorter; terminal spine as long as the third segment, slender, tapering slightly and slightly curved, its apical seta very short; sensilla of flagellum moderately numerous, in 2 overlapping rows on each funicular segment, in 1 row on each claval segment, long and slender with moderately long bases and long outstanding blades. Thorax about 1·6 times as long as broad, moderately arched, propodeal slope 40°–45°. Pronotum subtriangular, 0·25–0·30 length of mesoscutum. Mid lobe of mesoscutum rather weakly convex, slightly broader than long, shiny, with extremely fine and delicate engraved reticulation having areoles mostly 3–4 times as long as broad; median line absent or extremely vague; 3–4 adnotaular setae on each side, the hindmost slightly shorter than scutellar setae. Scutellum about 0·6 length of mesoscutum and about 1·2 times as broad as long, rather weakly convex in longitudinal axis, shiny, sculptured as mesoscutum; submedian lines distinct, slightly nearer to sublateral lines than to each other, diverging very slightly caudad, enclosing a space about twice as long as broad; setae equal in length, which is slightly less than distance between submedian lines, anterior pair in or slightly before middle. Dorsellum about twice as broad as long, hind margin obtusely angulate, shiny, weakly sculptured. Propodeum moderately transverse, medially as long as dorsellum; shiny, with fine delicate superficial reticulation; median carina distinct, thin except posteriorly; spiracles oval, separated by about 0·5 their diameter from metanotum; callus with 2 setae. Legs of medium length and thickness; hind coxae slightly more than twice as long as broad, with hind edge rather strongly curved; hind femora about 4 times as long as broad; spur of mid tibia virtually as long as basitarsus, fourth tarsal segment slightly shorter than basitarsus. Forewing 2·2–2·3 times as long as broad, reaching beyond tip of gaster; costal cell distinctly shorter than marginal vein, 11–13 times as long as broad, lower surface with row of setae which soon diverges from the submarginal vein and runs along the middle of the cell; submarginal vein with 3–4 dorsal setae; marginal vein rather thin, 3·9–4·5 times length of stigmal vein, its front edge with 12–16 rather weak setae; stigmal vein at about 45°, nearly straight, very thin proximally but expanding from the middle to form a rather small suboblong stigma which has a rather short uncus; postmarginal vein rudimentary; speculum small, hardly extended below the marginal vein, closed below; surface beyond it moderately thickly pilose, quite thickly distad; longest cilia 0·33–0·45 length of stigmal vein. Hindwing slightly pointed; cilia 0·30–0·35 breadth of wing. Gaster long-ovate, as long as or a little longer than head plus thorax, somewhat broader than thorax, 1·8–2·1 times as long as broad, very slightly acuminate; last tergite about as long as its basal breadth; longest seta of cercus about twice length of next longest and distinctly kinked; ovipositor sheaths projecting by 0·25–0·30 length of last tergite; tip of hypopygium slightly before 0·5 length of gaster.

Body bright green with golden tint in places; upper angle of mesopleuron yellow; gaster sometimes with base more or less testaceous ventrally, in one ♀ also dorsally; antennal scape yellow, slightly infuscate dorsally towards apex, pedicellus and flagellum testaceous, pedicellus darkened above in proximal two-thirds; legs yellow with hind coxae green, mid coxae slightly darkened at base; tegulae yellow; wings hyaline, venation testaceous. Length 1·6–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

Holotype ♀, **France**: Seine et Marne, Forêt de Fontainebleau, 27.vi.1976 (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Slovakia, Čenkov nr Štúrovo, 28.vii.1955 (Bouček) (BMNH). **Germany**: 1 ♀, Rügen I., near Baabe, vii.1960 (Bouček) (BMNH).

HOST. Unknown.

COMMENTS. The ♀ of *apiculatus* differs from that of *gratus* very obviously in the structure of the antennal flagellum, and in a few other small features (see description of *gratus*). It bears a remarkable superficial resemblance to that of *theioneurus* Masi from the Seychelles, especially in colour, shape of thorax and gaster, and antenna, especially its clava. However, *theioneurus* has the propodeal spiracles very small, circular, separated by about 1·5 times their diameter from the metanotum, and appears to be an aberrant member of subgenus *Ootetrastichus*.

Aprostocetus (Aprostocetus) gratus (Giraud) **comb. rev.**

(Figs 253, 464, 611, 680, 718)

Tetrastichus gratus Giraud, 1863: 1275: Domenichini, 1966*a*: 140; 1966*b*: 34. LECTOTYPE ♀, FRANCE (MNHN), here designated [examined].

Tetrastichus deplanatus Thomson, 1878: 291. Lectotype ♀, SWEDEN: Holmeja (ZI), designated by Graham (1961*b*: 49) [examined]. [Homonym of *Tetrastichus deplanatus* Walker, 1874.] [Synonymized by Erdos, 1954: 358.]

Tetrastichus thomsonii Dalla Torre, 1898: 23. [Replacement name for *deplanatus* Thomson, 1878.] [Synonymized by Graham, 1961*b*: 49.]

Geniocerus gratus (Giraud) Erdös, 1954: 358.

Aprostocetus gratus (Giraud) Graham, 1961*b*: 49.

Tetrastichus badulini Kostjukov, 1977: 191–192. Holotype ♀, U.S.S.R.: Volgograd area (ZIL) [examined]. **Syn. n.**

There are 3 females standing as *Tetrastichus gratus* in the Giraud collection (MNHN). The second specimen, pinned through the posterior part of the mesoscutum, but otherwise in perfect condition, is designated lectotype; it has been so labelled by me on a red label.

The identity of *gratus* was not recognized by Kostjukov (1977), perhaps not surprisingly because the very aberrant female antenna had not previously been figured, whilst the descriptions by various authors had not really emphasized its remarkable features. Kostjukov described the antenna of *Tetrastichus badulini* (a synonym of *gratus*) as having a 2-segmented funicle and a 3-segmented clava. However, I believe that the funicle of *gratus* is 3-segmented and the clava solid; the distribution of two types of sensilla on the clava suggest this.

♀. Differs from ♀ of *apiculatus* as follows. Eyes separated by 1·20–1·25 times their length. Antenna (Fig. 253) with pedicellus plus flagellum 1·25–1·40 times breadth of mesoscutum; pedicellus nearly or just twice as long as broad, 0·50–0·66 length of F1; anelli (Fig. 718); flagellum highly aberrant, funicle proximally hardly stouter than pedicellus but thickening somewhat distad, F1 distinctly longer than F2, 2·5–3·0 times as long as broad, tapering slightly distad, F2 slightly broader, subcylindrical and about twice as long as broad, F3 not or only slightly longer than broad, distinctly broader than F2 and virtually as broad as the clava, its apical margin oblique and produced dorsally in the form of a short point or tubercle; clava extremely short, only slightly longer than F3, 1·2–1·6 times as long as broad, solid, obtuse apically where it bears a downwardly curved, slender and tapering spine which is about half as long as the clava itself, apical seta of spine rudimentary. Thorax rather weakly arched; propodeal slope 20°–30°. Mid lobe of mesoscutum with 3–5 adnotaular setae on each side, the hindmost as long as or slightly shorter than anterior setae of scutellum. Scutellum 1·20–1·35 times as broad as long; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space which is not quite or only just twice as long as broad; anterior setae usually a little shorter than posterior setae, length of the latter slightly less than distance between submedian lines. Propodeal callus with 3–5 setae. Forewing 2·4–2·5 times as long as broad; costal cell 13–14 times as long as broad; *SM* with 4–6 rather weak dorsal setae; speculum very narrow or virtually absent. Hindwing usually slightly pointed, subobtuse in the largest ♀. Gaster slightly longer than head plus thorax, 1·8–2·4 times as long as broad; tip of hypopygium at about half length of gaster. Hypopygium (Fig. 680).

Colour as *apiculatus* but the body varies from golden-green through green to bright greenish blue; mouth-edge sometimes testaceous; fore and mid coxae usually yellow, occasionally a little darkened basally. Length 1·5–2·0 mm.

♂. Antenna (Fig. 464) with scape approximately equal in length to eye, reaching about level of vertex, with 2–3 setae on its external surface just inside the ventral plaque, which extends over about the middle third of the scape; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus 1·4–1·7 times as long as broad, distinctly shorter than F1; funicle proximally a little stouter than pedicellus, tapering very slightly distad; F1 hardly or only slightly shorter than F2 and 1·7–2·0 times as long as broad, following segments equal in length, each 2·0–2·3 times as long as broad; clava 4–5 times as long as broad, C3 with a long and slightly curved spine which lacks an apical seta; whorled setae long, those of F1 reaching about level with tip of F3. Ventral plica of gaster present though sometimes weak. Genitalia (Fig. 611).

Colour as ♀, but antennal scape sometimes extensively infuscate, flagellum sometimes infuscate dorsally.

MATERIAL EXAMINED

Many ♂, ♀. **Austria**, **Czechoslovakia**, **Denmark**, **Finland**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Italy**, **Netherlands**, **Sweden**, **U.S.S.R.**

HOSTS. *Giraudiella inclusa* (Frauenfeld) and *Lasioptera arundinis* (Schiner).

COMMENTS. The courtship behaviour of *gratus* has been described by Van den Assem *et al.* (1982: 207–208). The species is sometimes abundant in relatively undisturbed stands of *Phragmites australis*.

Aprostocetus (Aprostocetus) phragmiticola sp. n.

(Figs 256, 513, 612)

Tetrastichus species 9; Van den Assem *et al.*, 1982: 207, 220, fig. 2, a–c.

♀. Head very slightly broader than mesoscutum, 2·3–2·4 times as broad as long; POL equal to or hardly greater than OOL, OOL 2·3–2·7 OD. Eyes 1·10–1·15 times as long as broad, separated by 1·4–1·5 times their length. Malar space 0·7–0·8 length of eye, sulcus slightly curved. Mouth 1·25 malar space. Antenna (Fig. 256) with scape almost or just as long as eye, reaching level of vertex; pedicellus plus flagellum 1·20–1·25 times breadth of mesoscutum; pedicellus 2·1–2·4 times as long as broad, slightly shorter than F1; funicle proximally very slightly stouter than pedicellus, thickening very slightly distad, its segments decreasing or equal in length, F1 2·0–2·6 times, F2 2·0–2·5 times, F3 1·8–2·0 times as long as broad; clava slightly broader than F3, nearly or just as long as F2 plus F3, 3·0–3·9 times as long as broad, with C1 slightly longer than broad, C2 and C3 progressively shorter, spine about 0·6 length of C3, with apical seta 0·33 length of spine; sensilla moderately numerous, tending to form two rows on each segment, the proximal ones with short bases and long curved blades, the distal ones tending to be subdecumbent. Thorax about 1·5 times as long as broad; propodeal slope 30°–45°. Pronotum 0·25–0·30 length of mesoscutum. Mid lobe of mesoscutum as broad as or a little broader than long, rather weakly convex, sculptured as in *lycidas* but with areoles on disc posteriorly somewhat shorter; median line usually absent, occasionally a vague trace; 3–6 rather short adnotaular setae on each side. Scutellum 1·35–1·45 times as broad as long, weakly convex in long axis, sculpture with shorter areoles than on mesoscutum, those on posterior part only slightly longer than broad; submedian lines slightly nearer to sublateral lines than to each other, tending to converge very slightly caudad, enclosing a space nearly or quite twice as long as broad; length of anterior setae 0·5 distance between submedian lines, placed in or slightly behind middle, posterior setae slightly longer. Dorsellum 2·3–2·5 times as long as broad, hind edge obtusely angulate. Propodeum medially fully as long or slightly longer than dorsellum, fairly shiny, with fine, very slightly raised reticulation; median carina rather thin, with small triangular basal fovea, not or hardly expanded posteriorly; spiracles rather small, oval, separated by fully half their diameter from metanotum. Legs as in *lycidas* but hind coxae with posterior edge strongly curved; spur of mid tibia about 0·75 length of basitarsus. Forewing 2·3–2·4 times as long as broad; costal cell distinctly shorter than *M*, 11–12 times as long as broad; *SM* with 4–5 dorsal setae; *M* rather thin, 4·2–4·6 times length of *ST*, its front edge with 13–16 setae; *ST* at 45°, thin, stigma small and oval; *PM* rudimentary; speculum small, hardly extending below *M*; wing beyond it moderately thickly pilose, especially distad; cilia 0·25–0·33 breadth of wing. Hindwing obtuse; cilia 0·25–0·33 breadth of wing. Gaster long-ovate, a little longer than head plus thorax, as broad as or broader than thorax. 1·7–2·0 times as long as broad, very slightly acuminate; last tergite slightly broader than long; ovipositor sheaths projecting at least very slightly; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body yellow with some dark markings, non-metallic, or with a very weak bronze to greenish blue tinge on dark parts of head and thorax. Following parts fuscous to black; ocellar triangle, often a spot in middle of frons, a broad transverse band on occipital surface above foramen magnum; a spot on front of pronotum and a dot above each spiracle; sometimes most of pronotum; a semicircular spot, sometimes divided, on front of mesoscutum, a roundish spot on front of each scapula and axilla; scutellar lines, sometimes posterior part or whole sclerite between sublateral lines; sides of metanotum; middle or whole of propodeum; mesosternum more or less; transverse bands on gastral tergites, often also sides of gaster in proximal half; ovipositor sheaths. Antennal scape yellow, infuscate dorsally; pedicellus fuscous, sometimes yellow beneath and apically; flagellum brown to fuscous. Legs yellow with pretarsi brown. Tegulae yellow. Wings subhyaline or yellowish tinged, venation yellowish to brownish testaceous. Length 1·7–2·4 mm.

♂. Antenna (Fig. 513) with scape as long as eye, reaching slightly above vertex, 2·5–2·8 times as long as broad, with ventral plaque 0·40–0·55 length of scape; pedicellus plus flagellum slightly more than twice breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, as long as or slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering distad; F1 0·35–0·50 length of F2, subquadrate; following segments equal or increasing very slightly in length, F2 2·5–2·7 times, F3 2·6–3·2 times, F4 2·9–3·6 times as long as broad; clava not broader than F4, about as long as F3 plus F4, 6·0–7·7 times as long as broad, with C1 and C2 subequal in length, each 2·2–3·0 times as long as broad, C3 somewhat shorter; whorled setae very long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 612).

Body black with following parts yellow: about lower half of head, orbits narrowly; prosternum and prepectus more or less; sometimes hind margins of mid lobe of mesoscutum and of scapulae, occasionally sides of dorsellum. Gaster usually black, occasionally with a very small testaceous subbasal spot. Antennal scape yellowish with dorsal edge sometimes fuscous, ventral plaque fuscous; pedicellus and flagellum testaceous to brown, pedicellus darker dorsally. Legs yellow with hind coxae fuscous proximally.

MATERIAL EXAMINED

7 ♂, 17 ♀. Holotype ♀, **Netherlands**: Vlieland, on *Phragmites australis*, 13.v.1977 (*B. Nübel*) (ITZ).

Paratypes. **Great Britain**: 1 ♀, England, Suffolk, Flatford Mill, swept from *Phragmites*, 13.ix.1968 (*Graham*) (BMNH). **Hungary**: 1 ♀, Kelebia, 2.viii.1962; 2 ♀, Gárdony, 27.viii.1956, from *Phragmites* (*Erdös*) (TM), all determined as *arenarius*. **Netherlands**: 1 ♂, Vlieland, 4.v.1977, 2 ♂, 4 ♀, 9.v.1977, 3 ♂, 5 ♀, 13.v.1977, 1 ♀, vi.1977, all on *Phragmites* (*B. Nübel*) (ITZ); 1 ♂, 2 ♀, Schiermonnikog, v.1977 (*B. Nübel*) (MJG).

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae on *Phragmites*.

COMMENT. The courtship behaviour of this species has been described by Van den Assem *et al.* (1982, as *Tetrastichus* species 9).

Aprostocetus (Aprostocetus) foraminifer sp. n.

(Figs 255, 460, 613)

♀. Head 1·1 times as broad as mesoscutum, about twice as broad as long; temples almost nil; POL about 1·5 OOL, OOL about 2·5 OD. Eyes 1·2 times as long as broad, virtually bare. Malar space 0·6 length of eye; sulcus with a subtriangular fovea below eye, extending about 0·25 length of gena. Mouth about 1·3 malar space. Setae of head very fine and short. Antenna (Fig. 255) with scape 0·75 length of eye, about 2·6 times as long as broad; pedicellus plus flagellum about 1·3 times breadth of mesoscutum; pedicellus 2·1 times as long as broad, equal in length to F1; funicle proximally hardly as stout as pedicellus, thickening very slightly distad, its segments decreasing slightly in length, F1 2·3 times, F2 1·6 times, F3 1·3 times as long as broad; clava slightly broader than F3, slightly longer than F2 plus F3, about 2·5 times as long as broad, with C1 and C2 equal in length, each quadrate, C3 shorter, spine about 0·4 length of C3, with apical seta as long as spine; sensilla moderately numerous, moderately long, uniseriate (irregularly on F1). Thorax 1·53 times as long as broad; propodeal slope 30°. Pronotum conical, 0·4 length of mesoscutum. Mid lobe of mesoscutum slightly broader than long, rather weakly convex, shiny, reticulation excessively fine, engraved, with most areoles twice or less than twice as long as broad; median line absent; 2 short and fine adnotaular setae on each side. Scutellum fully 0·7 as long as mesoscutum, 1·3 times as broad as long, weakly convex in long axis, shiny, sculptured like mesoscutum; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space 1·9 times as long as broad; setae fine, anterior pair very short, well before middle and nearer to submedian than to sublateral lines, posterior pair somewhat longer. Dorsellum 3 times as broad as long, hind edge obtusely angulate. Propodeum narrowly and very weakly emarginate, medially a little longer than dorsellum, moderately shiny, with very fine superficial reticulation; median carina fairly sharp in anterior half, expanding in posterior half; spiracles oval, moderate-sized, touching metanotum; callus with a long seta outside the spiracle and a short seta farther back. Legs of medium length and thickness; hind coxae about twice as long as broad, with fine superficial reticulation, hind edge strongly curved; hind femora about 3·5 times as long as broad; spur of mid tibia fully as long as basitarsus, fourth tarsomere equal in length to basitarsus. Forewing 2·8 times as long as broad; costal cell distinctly shorter than *M*, 14 times as long as broad; *SM* with 3 dorsal setae; *M* somewhat thickened proximally but tapering distad, 5·4 times length of *ST*, its front edge with 9–10 setae; *ST* at 45°, slightly curved, thin proximally but expanding slightly in distal half, stigma small and oblong; *PM* a short stub; speculum very small, not extending below *M*; wing beyond it moderately thickly pilose, thickly so distad; cilia 0·5 length of *ST*. Hindwing subobtuse; cilia 0·33 breadth of wing. Gaster lanceolate, about 1·3 times as long as head plus thorax, nearly as broad as thorax, 2·65 times as long as broad, acute; last tergite nearly as long as broad; ovipositor sheaths projecting by 0.4 length of last tergite; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at half length of gaster.

Body black with fairly strong bluish green and green metallic tints. Antennal scape testaceous with dorsal edge brown, pedicellus and flagellum dark brown. Legs yellowish testaceous with fore coxae slightly darker basally, mid and hind coxae mainly fuscous, all tarsi darkening slightly distad with fourth tarsomere and pretarsus fuscous. Tegulae testaceous. Wings subhyaline, venation testaceous. Length 1·4 mm.

♂. Antenna (Fig. 460) with scape 0·95 length of eye, not reaching median ocellus, 2·2 times as long as broad, with ventral plaque about 0·65 length of scape; pedicellus plus flagellum 1·75–1·85 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, about as long as F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 distinctly shorter than F2, not or hardly longer than broad, following segments equal in length, each about twice as long as broad; clava not broader than F4, as long as or slightly longer than F3 plus F4, 3·3–3·5 times as long as broad, with C1 and C2 equal in length, each 1·5–1·7 times as long as broad, C3 shorter; whorled setae moderately long, those of F1 reaching about level with middle of F3. Genitalia (Fig. 613). Length 1·10–1·25 mm.

MATERIAL EXAMINED

2 ♂, 1 ♀. Holotype ♀, **France**: Vaucluse, Combe de Veaux, near Malaucène, 12.vii.1978 (*Graham*) (BMNH).

Paratypes. **France**: 2 ♂, same data as holotype (BMNH).

HOST. Unknown. The specimens were collected amongst grasses in a damp field.

Aprostocetus (Aprostocetus) aquaticus (Erdös) **comb. n.**

(Fig. 190)

Geniocerus aquaticus Erdös, 1954: 358. LECTOTYPE ♀, HUNGARY: Gárdony (Velencei tó), 10.vii.1953, from *Phragmites vulgaris* (*Erdös*) (TM), here designated [examined].

Tetrastichus aquaticus (Erdös) Domenichini, 1966*a*: 177; 1966*b*: 18; Kostjukov, 1978*b*: 454.

♀. Head 1·2–1·3 times as broad as mesoscutum, about 2·2 times as broad as long; no sulcus between lateral ocellus and eye; POL 1·2 OOL, OOL 2·75 OD. Eyes 1·15 times as long as broad, separated by 1·2 times their length. Malar space 0·5 length of eye, sulcus virtually straight, with a minute fovea below eye. Mouth 1·6 times malar space. Setae of vertex pale and fine, length equal to OD. Antenna (Fig. 190) with scape 0·85 length of eye, hardly reaching lower edge of median ocellus; pedicellus plus flagellum 1·4 times breadth of mesoscutum; pedicellus 1·8 times as long as broad, 0·65 length of F1; funicle proximally hardly stouter than pedicellus, its segments decreasing in length, F1 3·7 times, F2 3·3 times, F3 twice as long as broad; clava much broader than F3, distinctly shorter than F2 plus F3, nearly 3 times as long as broad, pointed, indistinctly segmented, with C1 and C2 apparently subequal, each about as long as broad, C3 much shorter, spine fully as long as C3, slender and very slightly curved with apical seta very short; sensilla sparse, in 2 overlapping rows on F1 and F2, uniseriate on other segments, moderately long, very slender, subdecumbent, some with short, others with long, projecting blades. Thorax about 1·4 times as long as broad; propodeal slope about 10°. Pronotum 0·25 length of mesoscutum. Mid lobe of mesoscutum 1·2 times as broad as long, weakly convex, shiny, reticulation excessively fine, engraved, with most areoles about 3 times as long as broad; median line absent; 3–4 pale and thin adnotaular setae on each side. Scutellum 1·3 times as broad as long, nearly flat in profile, rather more finely reticulate than mesoscutum and with areoles slightly longer; submedian lines very fine, straight, slightly nearer to sublateral lines than to each other, enclosing a space 1·8–2·1 times as long as broad; setae weak and pale, anterior pair very short and placed well before middle, posterior pair longer but their length hardly more than half distance between submedian lines. Dorsellum about 3 times as broad as long, hind edge obtusely angulate. Propodeum medially slightly shorter than dorsellum, shiny; median carina thin anteriorly, slightly expanded posteriorly; spiracles small, subcircular, about half their diameter from metanotum; callus with 3 setae. Legs not slender; hind coxae very strongly oblique; hind femora 3·8 times as long as broad; spur of mid tibia 0·73 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·5 times as long as broad; costal cell distinctly shorter than *M*, 11–13 times as long as broad; *SM* with 3 dorsal setae; *M* thin, 4·5–4·7 times length of *ST*, its front edge with 15–18 setae; *ST* at 50°, very thin proximally but expanding very gradually, stigma small and rhomboid; *PM* a very short stub; speculum very small, not extending below *M*; wing beyond it moderately thickly pilose; cilia 0·43 length of *ST*. Hindwing subobtuse; cilia 0·35 breadth of wing. Gaster lanceolate, more than twice as long as thorax but narrower, 4·3–5·3 times as long as broad, acuminate; last tergite 1·3–1·4 times as long as broad; ovipositor sheaths projecting to about half length of last tergite; longest seta of each cercus twice length of next longest, kinked, pale; tip of hypopygium at about one-third length of gaster.

Head and thorax black with weak bluish green tint; a yellowish line in front of median ocellus; a pale mark outside each torulus; mouth-edge testaceous; sides of pronotum broadly, prosternum, prepectus and upper angle of mesopleuron, yellow; scapular flanges yellowish. Gaster yellow with about distal two-thirds of dorsal surface infuscate; ovipositor sheaths black. Antennal scape yellow, pedicellus and flagellum fuscous. Legs yellow with bases of hind coxae slightly infuscate; pretarsus of all legs brownish. Tegulae, basal plate of wing and venation yellow; wing slightly yellowish-tinged. Length about 2 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. **Hungary**: 2 ♀ (lectotype, paralectotype), Gárdony, 10.vii.1953, swept from *Phragmites australis* (= *vulgaris*) (*Erdös*) (TM).

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae.

COMMENTS. This very distinct species seems better placed here rather than in the *fulvipes*-complex where it was placed by Domenichini (1966*a*: 177).

My figure of the ♀ antenna was drawn from the lectotype; the antenna is very pale in colour and details are difficult to see; the clava appears to be very indistinctly segmented. Erdös' figure 16K does not convey a correct idea of the shape of the antenna.

Aprostocetus (Aprostocetus) xanthopus (Nees) **comb. n.**

(Figs 257, 258, 482, 614)

Eulophus xanthopus Nees, 1834: 185; Ratzeburg, 1844*b*: 167, pl. 8, fig. 1. Holotype ♀, GERMANY, near Sickershausen (destroyed). NEOTYPE ♀, GERMANY: the lecototype of *Eulophus pallipes* Hartig, here designated [examined].

Eulophus pallipes Hartig, 1838: 255. LECTOTYPE ♀, GERMANY (ZSBS), here designated [examined]. [Synonymized by Ratzeburg, 1844*b*: 167.]

Ichneumon (*Eulophus*) *xanthopus* (Nees) Ratzeburg, 1844*a*: 28.

Ichenumon (*Eulophus*) *hylesinorum* Ratzeburg, 1844*a*: 28; 1844*b*: 167. LECTOTYPE ♀, ? GERMANY (NM), here designated [examined]. **Syn. n.**

Tetrastichus xanthopus (Nees) Seitner, 1927: 428; Sitowski, 1928: 1–12; Domenichini, 1966*a*: 186; 1966*b*: 54.

The holotype of *Eulophus xanthopus* is not present in the remnants of the Nees collection in UM, and is presumed to have been destroyed with the rest of that collection in Germany during 1945. The description of *xanthopus* agrees reasonably well with the ♀ of *pallipes* Hartig, as Ratzeburg concluded, hence I follow previous authors in adopting his synonymy. There are 20 ♂ and 48 ♀ syntypes of *Eulophus pallipes* in the Hartig collection (ZSBS) as follows: (1) 12 ♀ mounted on card-points in a whorl, with remnants of a lepidopterous pupa, probably of *Dendrolimus pini*; (2) 4 ♂, 18 ♀, similarly mounted, with a blue ticket marked '1009'; (3) 2 ♂, 9 ♀, similarly mounted, with a pink ticket '340'; (4) 2 ♂, 6 ♀, similarly mounted, bearing my serial number 142; (5) 8 ♂, 1 ♀, and one broken specimen, with a blue ticket, also my number 146; (6) 4 ♂, 2 ♀, and a blank card-point, with a red ticket '908', also my number 189. A ♀ in good condition from batch (2) has been remounted by me and is here designated lectotype.

The original material of *Ichneumon* (*Eulophus*) *hylesinorum* was thought to be lost, but two syntypes, ♂ and ♀, both gummed to a card-point, are in NM. The ♀ specimen is here designated lectotype. The syntypes bear the following labels (1) Hyl. [esinus] minim. [us], (2) Collectio Ratzeburg, (3) Hylesinorum R. det. Ratzeburg. Label (1) is probably Ratzeburg's, the others are later additions. The lectotype was very dirty and in poor condition but is clearly recognizable as belonging to *xanthopus* (Nees). The host mentioned by Ratzeburg was *Hylesinus minimus* but this was probably a mistake, as he did not always segregate his rearings carefully.

♀. Head at most 1·2 times as broad as mesoscutum, 2·10–2·15 times as broad as long; POL just equal to or slightly less than OOL, OOL about 2·5 times OD. Eyes about 1·25 times as long as broad, separated by 1·25 times their length. Malar space 0·6 length of eye, sulcus with fovea which extends about 0·3 length of gena. Mouth about 1·5 times malar space. Antenna (Fig. 257) with scape shorter than eye, not reaching median ocellus; pedicellus plus flagellum nearly equal to breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, about as long as anelli plus F1; funicle proximally much stouter than pedicellus, thickening slightly distad; F1 quadrate or slightly longer than broad, F2 about quadrate, F3 quadrate to very slightly transverse; clava a little broader than F3, somewhat longer than F2 plus F3, 2·0–2·2 times as long as broad, pointed, spine about 0·5 length of C3 with apical seta as long as spine; sensilla uniseriate, moderately long, those on funicular segments subdecumbent, those on clava with somewhat projecting tips; flagellum with rather long outstanding setae. Thorax about 1·5 times as long as broad; propodeal slope 35°–40°. Pronotum short, setose except anteromedially, with 14–16 longer setae near hind margin. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately convex, moderately shiny, reticulation very fine to extremely fine, superficial or engraved, with areoles 1–2 times as long as broad (most only slightly longer than broad); median line absent; 3–4 adnotaular setae on each side, often a second row of 1–2 setae mesad of the first row, rarely a third row of 1–3 setae. Scutellum somewhat broader than long, moderately convex, rather more finely reticulate than mesoscutum; submedian lines about equidistant from each other and from sublateral lines, or slightly nearer to the latter, enclosing a space about twice as long as broad; setae subequal, their length nearly or quite equal to distance between submedian lines, anterior pair slightly before (usually) or in middle. Dorsellum about 3 times as long as broad. Propodeum medially slightly longer than dorsellum, moderately shiny, with fine, hardly raised reticulation; median carina sharp, rather thin; spiracles rather large, short-oval, their length more than one-third that of propodeum at same level; callus with 3–7 setae. Legs rather short, not slender; hind coxae oblique, about 2·5 times as long as broad, shiny; hind femora about 4 times as long as broad; spur of mid tibia nearly as long as basitarsus, fourth tarsomere nearly as long as basitarsus. Forewing (Fig. 258) 2·2–2·5 times as long as broad; costal cell about as long as *M*, about 9 times as long as broad; *SM* with 3–4 (–6) dorsal setae; *M* rather thick, 4·2–4·6 times length of *ST*, its front edge with 9–11 setae; *ST* rather thick proximally, expanding distally, stigma moderate-sized; *PM* absent or rudimentary; speculum rather small, wing beyond it rather densely pilose; cilia at most 0·33 length of *ST* in small ♀, but usually shorter. Hindwing obtuse or subobtuse; cilia 0·18–0·25 breadth of wing. Gaster short oval, from slightly shorter to somewhat longer than thorax, usually a little broader than thorax, obtuse or bluntly pointed; last tergite very short, broader than long; tips of ovipositor sheaths barely, or only just, reaching tip of last tergite; longest seta of each cercus about twice length of next longest; tip of hypopygium at about half length of gaster.

Black, shiny, non-metallic, or with a faint bluish tinge; face sometimes with two yellowish stripes; base of gaster sometimes brownish. Antennal scape mainly to wholly testaceous, pedicellus testaceous but more or less infuscate dorsally at least at base, rest of antenna brown. Legs including fore coxae wholly or mainly, mid and hind coxae partly, testaceous or yellowish. Tegulae testaceous. Wings subhyaline or slightly infumate, venation yellowish to testaceous. Length 1·2–1·7 mm.

♂. Antenna (Fig. 482) with scape nearly as long as eye, about 2·5 times as long as broad, with ventral plaque slightly more than half length of scape; pedicellus plus flagellum about 1·5 times breadth of mesoscutum; flagellum (somewhat flattened in the specimen figured) slender, filiform, slightly stouter than pedicellus; F1 somewhat shorter than F2 and 1·5–1·7 times as long as broad, following segments subequal in length, each nearly or about twice as long as broad; clava somewhat longer than F3 plus F4; whorled setae rather short, those of F1 reaching only slightly beyond tip of F2. Genitalia (Fig. 614) about 2·5 times as long as broad, not quite half length of gaster; digitus about 1·6 times as long as broad, with a moderately long and moderately oblique, distinctly curved apical spine and, just exterior to it, an angulation or weak tubercle; aedeagus narrowing rather abruptly to a blunt point.

MATERIAL EXAMINED

20 ♂, 52 ♀. **Austria, Czechoslovakia, Germany, Poland.**

HOSTS. *Dendrolimus pini* (L.) and *Macrothylacia rubi* (L.) as gregarious parasite of the pupae.

Aprostocetus (Aprostocetus) boreus (Delucchi) comb. n.

(Figs 248, 502, 616)

Tetrastichus boreus Delucchi, 1954: 105; Domenichini, 1966*a*: 156; 1966*b*: 20. Holotype ♀, GERMANY: Reichenhall (*F. Groschke*) (coll. Delucchi) [not examined].

♀. Head very slightly broader than mesoscutum, about 2·2 times as broad as long; POL 1·05–1·15 OOL, OOL about 1·8 OD. Eyes 1·25–1·30 times as long as broad. Malar space 0·65 length of eye. Mouth 1·3–1·4 times malar space. Antenna (Fig. 248) with scape 0·83 length of eye, not quite reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·2–2·3 times as long as broad, a little shorter than or as long as F1; funicle distinctly stouter than pedicellus, nearly filiform, its segments equal or decreasing very slightly in length, oval, F1 1·7–2·0 times, F2 1·4–1·7 times, F3 1·3–1·7 times as long as broad; clava about as broad as F3, about as long as F2 plus F3, nearly or quite 3 times as long as broad, acute, with C1 and C2 slightly longer than broad, C3 shorter, spine about 0·4 length of C3 with apical seta slightly shorter than spine; sensilla moderately numerous, in 1 irregular row on each segment or sometimes in 2 overlapping rows on some funicular segments, with long bases and shorter projecting blades. Thorax about 1·5 times as long as broad; propodeal slope 45°. Pronotum rather short. Mid lobe of mesoscutum slightly broader than long, moderately convex, moderately shiny, with areoles of reticulation 2–3 times as long as broad; median line absent, or weakly indicated in posterior half; 3–4 adnotaular setae on each side. Scutellum about 1·5 times as broad as long, moderately convex; submedian lines slightly nearer to sublateral lines than to each other, tending to diverge slightly caudad, enclosing a space 2·2–2·3 times as long as broad; setae subequal, their length nearly or just equal to distance between submedian lines, anterior pair in middle. Dorsellum 3·5–3·8 times as broad as long. Propodeum subrectangular, medially about twice as long as dorsellum, with fine, very slightly raised reticulation; median carina fine, rather sharp, expanded slightly near its hind end; spiracles rather small; callus with 5–6 setae. Legs somewhat slender; hind coxae with very fine but distinctly raised reticulation; spur of mid tibia about 0·75 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about 2·2 times as long as broad; costal cell shorter than *M*, 9–10 times as long as broad; *SM* with 3–5 dorsal setae; *M* rather thin, about 5 times length of *ST*, its front edge with 11–14 setae; *ST* at 45°, very thin proximally, gradually expanding, stigma small and subrectangular; *PM* rudimentary; speculum rather small, not extending below *M*; wing beyond it moderately thickly pilose; cilia at most 0·5 length of *ST*. Hindwing obtuse; cilia about 0·23 breadth of wing. Gaster oval, about as long and as broad as thorax, bluntly pointed; last tergite nearly twice as broad as long; ovipositor sheaths barely reaching tip of last tergite; longest seta of each cercus nearly 1·5 length of next longest, curved.

Colour (see Delucchi, 1954). Length 1·5–1·6 mm.

♂. Antenna (Fig. 502) with scape 2·5–2·6 times as long as broad, reaching nearly to level of vertex, with ventral plaque 0·5–0·6 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus about twice as long as broad, somewhat longer than F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 subquadrate and much shorter than F2, following segments subequal or increasing very slightly in length, F2 2·0–2·5 times, F3 2·7–3·0 times, F4 2·7–2·8 times as long as broad; clava not broader than F4, about as long as F3 plus F4, 5·0–5·5 times as long as broad; whorled setae moderately long, those of F1 reaching about half-way along F3. Genitalia (Fig. 616).

MATERIAL EXAMINED

1 ♂, 6 ♀. **Czechoslovakia**: 5 ♀, Bohemia, Jindřichův Hradec, Radounka, reared viii.1970 from *Euleia heraclei* (L.) (*K. Spitzer*) 1 ♀, Deblík Hill, Středohoří, 26.vii.1956 (*Bouček*) (BMNH). **Great Britain**: 1 ♂, England, Berkshire, Bagley Wood, 11.ix.1959 (*Graham*) (BMNH).

HOST. *Euleia heraclei* (L.).

Aprostocetus (Aprostocetus) grylli (Erdös) **comb. rev.**

(Figs 318, 506, 615)

Geniocerus grylli Erdös, 1954: 357. LECTOTYPE ♀, HUNGARY: Berhida, 9.vii.1953 (*Erdös*) (TM), here designated [examined].

Aprostocetus grylli (Erdös) Graham, 1961*a*: 33; 1961*b*: 59.

Tetrastichus grylli (Erdös) Domenichini, 1966*a*: 172; 1966*b*: 34; Kostjukov, 1978*b*: 462.

From the 25 ♀ syntypes of *grylli* in the Erdös collection I have selected and labelled as lectotype a specimen on the uppermost of two cards on the same pin, bearing labels 'Berhida 1953.vii.9 dr. Erdös; *Chrysopogon gryllus* L; Cotype; *Geniocerus grylli* Erd. det. Erdös'. The remaining syntypes, here designated paralectotypes, are conspecific with the lectotype.

♀. Head about as broad as mesoscutum, about 2·5 times as broad as long; POL 2·2–2·3 times OOL, OOL only slightly greater than OD. Eyes about 1·4 times as long as broad, separated by slightly more than their length. Malar space about 0·55 length of eye, sulcus hardly curved. Mouth about 1·3 malar space. Antenna (Fig. 318) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·0–2·4 times as long as broad, as long as or slightly longer than F1; funicle proximally very slightly stouter than pedicellus, thickening very slightly distad; F1 as long as or a little shorter than F2, 1·5–2·0 times as long as broad, F2 1·5–2·0 times, F3 1·2–1·5 times as long as broad; clava distinctly broader than F3, slightly longer than F2 plus F3, 2·3–2·8 times as long as broad, obtuse or rounded apically, with C1 occupying fully half the total length, as long as or slightly longer than broad, C2 much shorter and slightly transverse, C3 hardly more than half length of C2, spine nearly or quite as long as C3, with apical seta about 0·4 length of spine; sensilla moderately numerous, in 1 irregular row on each segment, moderately long, decumbent with their tips projecting slightly. Thorax 1·50–1·65 times as long as broad; propodeal slope about 45°. Pronotum very short. Mid lobe of mesoscutum slightly longer than broad, moderately strongly convex, not very shiny, reticulation with most areoles 3–4 times as long as broad (the sculpture a little stronger than that of *lycidas* but not quite so sharp as in *caudatus*); median line fine though distinct; 3–5 rather short and subdecumbent adnotaular setae on each side. Scutellum slightly broader than long, moderately convex, with sculpture finer and more delicate than that of mesoscutum; submedian lines very distinctly nearer to sublateral lines than to each other, converging slightly posteriorly, enclosing a space 1·7–1·9 times as long as broad; setae subequal, their length about 0·7 distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum subtriangular, 2·0–2·3 times as broad as long. Propodeum less than 3 times as broad as its length at sides, medially slightly shorter than dorsellum, moderately shiny, very finely and weakly reticulate; median carina slightly raised, broad and flat, expanding posteriorly; callus usually with 2 setae, one outside spiracle and another nearer hind corner, occasionally a third between these two. Legs of medium length, rather stout; hind femora 3·6–3·7 times as long as broad; spur of mid tibia almost as long as basitarsus, fourth tarsomere hardly shorter than basitarsus and rather stout. Forewing 2·30–2·35 times as long as broad; costal cell shorter than *M*, 11–13 times as long as broad; *SM* with 3–6 dorsal setae; *M* rather thin, 3·2–3·5 times length of *ST*, its front edge with 9–16 setae; *ST* at about 50°, nearly straight, thin proximally but gradually expanding, stigma small; *PM* rudimentary; speculum very small, not extending below *M*; wing beyond it moderately thickly pilose, quite thickly distad; cilia 0·3–0·5 length of *ST*. Hindwing sharply pointed or acute; cilia 0·4–0·5 breadth of wing. Gaster linear-lanceolate, tending to be parallel-sided in proximal half or more, acute apically, about twice as long as but narrower than thorax, 3·0–5·7 times as long as broad; last tergite distinctly (up to 1·7 times) longer than broad; ovipositor sheaths projecting by 0·3 to 0·5 length of last tergite; longest seta of each cercus about 1·5 times length of next longest; tip of hypopygium at or slightly before half length of gaster.

Body black, with a very weak olive or bluish tinge; upper angle of mesopleuron narrowly testaceous, mouth-edge sometimes narrowly so. Antennae brown with scape and pedicellus yellowish to testaceous, often more or less infuscate dorsally. Coxae black, or fore coxae partly to wholly yellow, legs otherwise yellow or testaceous with hind femora sometimes more or less brown or fuscous, fore tarsi brownish, pretarsus of mid and hind legs brown. Tegulae mainly to wholly testaceous. Wings subhyaline or slightly yellowish, venation testaceous to brownish testaceous, with base of *ST* more or less decolourized. Length 1·3–2·2 mm.

♂. Antenna (Fig. 506) attached rather high on the head, about level with middle of eyes; scape about 0·85 length of eye, reaching distinctly above vertex, 3·30–3·65 times as long as broad, with ventral plaque 0·27–0·30 length of scape; pedicellus plus flagellum 1·9–2·2 times breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, slightly shorter than or as long as F1; funicle slender, proximally about as stout as pedicellus, tending to taper very slightly distad; F1 0·7–0·8 as long as F2 and 1·8–2·3 times as long as broad, F2 2·5–2·7 times, F4 2·7–3·1 times as long as broad; clava hardly broader than F4, slightly to somewhat longer than F3 plus F4, 6·0–6·5 times as long as broad, with C1 and C2 each twice or more than twice as long as broad, C3 slightly shorter; whorled setae very long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 615). 7·5–8·0 times as long as broad.

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **Hungary**, **Madeira**, **Spain**, **Yugoslavia**.

HOSTS. Unknown. *A. grylli* has been swept from grasses such as *Chrysopogon gryllus* (Erdös, 1954) and *Hyparrhenia hirta* (Graham, 1981).

Aprostocetus (Aprostocetus) pachyneuros (Ratzeburg) **comb. rev.**

(Figs 260, 261, 503, 617)

Eulophus pachyneuros Ratzeburg, 1844: 167. Syntypes, ? GERMANY (destroyed). NEOTYPE ♀, AUSTRIA (*G. Mayr*) (BMNH), here designated [examined].
Entedon pachyneurus Ratzeburg, 1848: 170. [Invalid emendation.]
Geniocerus pachyneurus (Ratzeburg) Erdös, 1954: 356; Sugonjaev, 1962: 176.
Aprostocetus pachyneuros (Ratzeburg) Graham, 1961*b*: 59.
Tetrastichus pachyneurus (Ratzeburg) Domenichini, 1966*a*: 171; 1966*b*: 43; Kostjukov, 1978*b*: 465.

The original material of *Eulophus pachyneuros* is not present in the remnants of the Ratzeburg collection in Eberswalde (Bouček, 1964) and was evidently destroyed in 1945. In BMNH a ♂ and a ♀ pinned with minutien pins to a pith block and labelled 'Collect. G. Mayr' and 'Tetr [astichus] pachyneurus Rtz' were examined. They were probably reared by Mayr in the Vienna district of Austria. Mayr's interpretation of the species is accepted and the ♀ specimen is here designated neotype of *pachyneuros*. The two above specimens were donated many years ago to BMNH, through F. Ruschka.

♀. Head 2·05–2·15 times as broad as mesoscutum, 2·6–2·9 times as broad as long; POL 1·10–1·25 OOL, OOL about twice OD. Eyes about 1·25 times as long as broad, separated by 1·5 times their length. Malar space 0·65–0·70 length of eye, sulcus straight. Mouth 1·15 times malar space. Antenna (Fig. 260) with scape 0·8 length of eye, not nearly reaching median ocellus; pedicellus plus flagellum 1·10–1·15 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, somewhat shorter than F1; funicle distinctly stouter than pedicellus, filiform, its segments subequal or decreasing slightly in length, F1 1·6–2·0 times, F2 1·6–1·8 times, F3 1·4–1·6 times as long as broad; clava hardly broader than funicle, nearly or just as long as F2 plus F3, 2·4–3·2 times as long as broad, with C1 subquadrate, C2 subquadrate and slightly shorter than C1, C3 still shorter, spine about 0·25 length of C3, with apical seta about 0·6 length of spine; sensilla rather numerous, biseriate or irregularly uniseriate on funicular segments, relatively short, decumbent. Thorax 1·4–1·5 times as long as broad; propodeal slope about 50°. Pronotum very short. Mid lobe of mesoscutum about as long as broad, not very shiny, with excessively fine, superficial or lightly engraved reticulation having most areoles about 3 times as long as broad; median line usually absent, occasionally vaguely indicated; 5–6 adnotaular setae on each side, the hindmost as long as scutellar setae. Scutellum slightly broader than long, moderately strongly convex, reticulation tending to be finer than that of mesoscutum, areoles variable, some relatively shorter; submedian lines fine, hardly nearer to sublateral lines than to each other, enclosing a space 2·5–3·0 times as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum about twice as broad as long. Propodeum medially as long as or a little longer than dorsellum, shiny, with extremely fine weak reticulation; median carina thin and sharp; callus with 5–11 setae. Legs rather slender; hind femora about 4 times as long as broad; spur of mid tibia 0·7 length of basitarsus, fourth tarsomere very slightly shorter than basitarsus. Forewing (Fig. 261) hardly more than twice as long as broad; costal cell nearly or about as long as *M*, its lower surface with a single or double row of setae; *SM* with 4–5 dorsal setae; *M* tending to be thick, especially in larger specimens such as the one figured, 2·75–3·00 times length of *ST*, its front edge with 15–17 short setae; *ST* at about 50°, stigma relatively large, subrectangular and longer than high; *PM* a short stub; speculum small, sometimes with some scattered setae on lower surface of wing, not extending below *M*; wing beyond it thickly pilose, quite densely in apical part; cilia 0·12–0·15 length of *ST*. Hindwing obtuse or rounded; cilia about 0·15 breadth of wing. Gaster ovate, about as long as thorax, 1·3–2·0 times as long as broad, bluntly pointed; last tergite about twice as broad as long; ovipositor sheaths hardly projecting; longest seta of each cercus about 1·5 length of next longest, curved; tip of hypopygium slightly beyond half length of gaster.

Body black, head and mesoscutum occasionally with a very weak bluish tinge. Antennal scape and pedicellus black, flagellum brown to fuscous. Coxae black, femora brownish to black proximally, sometimes only their tips pale; legs otherwise testaceous or yellowish with tibiae sometimes more or less infuscate medially, fourth segment of tarsi fuscous. Tegulae testaceous, sometimes brown posteriorly. Wings hyaline, venation testaceous to fuscous. Length 1·7–2·0 mm.

♂. Antenna (Fig. 503) with scape about 0·8 length of eye, about 2·5 times as long as broad, with ventral plaque 0·45–0·50 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus nearly twice as long as broad, slightly shorter than F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 about 0·7 length of F2 and 1·4–1·7 times as long as broad, following segments equal in length, F2 2·0–2·3 times, F3 2·3–2·5 times, F4 2·3–2·7 times as long as broad; clava hardly as broad as F4, about as long as F3 plus F4, 5·5–5·7 times as long as broad; whorled setae only moderately long, those of F1 reaching slightly beyond tip of F2. Genitalia (Fig. 617).

MATERIAL EXAMINED

3 ♂, 6 ♀. **Austria, Czechoslovakia, Germany, Great Britain.**

HOSTS. *Kermes quercus* (L.) and *K. roboris* (Fourcroy) on *Quercus* spp.

COMMENT. This species appears to be rather rare and is probably associated with older oaks in relicts of old forest.

Aprostocetus (Aprostocetus) neglectus (Domenichini) comb. rev.

(Figs 347, 348, 504, 621)

[*Tetrastichus epilachnae* Giard; Marchal, 1907: 14–16; Martelli, 1908: 270–271; Masi, 1909: 136–137. Misidentifications.]

[*Geniocerus epilachnae* Giard; Erdös, 1954: 356. Misidentification.]

Tetrastichus neglectus Domenichini, 1956: 227–229; 1966*a*: 148; 1966*b*: 41; Kostjukov, 1978*b*: 452. Syntypes ♂ ♀, Italy: Varenna-Lecco, 1955 (*L. Grandori*) (GD) [examined].

Aprostocetus neglectus (Domenichini) Graham, 1961*b*: 59.

♀. Head very slightly broader than mesoscutum, about 2·5 times as broad as long; POL about 1·5 OOL, OOL about 1·5 OD. Eyes 1·20–1·25 times as long as broad, separated by 1·3–1·4 times their length. Malar space 0·6 length of eye, sulcus nearly straight. Mouth 1·2 malar space. Antenna (Fig. 347) with scape not nearly reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 1·7–1·8 times as long as broad, as long as or very slightly longer than F1; funicle proximally slightly stouter than pedicellus, not or hardly thickening distad, its segments usually equal or subequal in length (occasionally F1 slightly shorter), F1 1·2–1·4 times, F2 1·4–1·5 times, F3 1·3–1·5 times as long as broad; clava not or slightly broader than F3, slightly to much longer than F2 plus F3, 3·0–3·3 times as long as broad, acute, its segments decreasing in length, C1 subquadrate, spine about 0·3 length of C3, with apical seta as long as spine; sensilla numerous, usually biseriate on funicular segments and uniseriate on claval segments, short, decumbent with hardly projecting tips. Thorax about 1·5 times as long as broad; propodeal slope 60°. Mid lobe of mesoscutum slightly broader than long, moderately to rather strongly convex, not very shiny, with extremely fine superficial or almost engraved reticulation with most areoles about 3 times as long as broad; median line obsolescent (traceable just near scutellum); 3–4 adnotaular setae on each side. Scutellum 1·10–1·25 times as broad as long, moderately convex; submedian lines rather weak, about equidistant from each other and from sublateral lines, or hardly nearer the latter, enclosing a space 2·5–2·7 times as long as broad; setae equal, their length fully equal to distance between submedian lines, anterior pair in or hardly behind middle. Dorsellum about twice as broad as long. Propodeum medially slightly to distinctly longer than dorsellum; median carina thin and sharp, not foveate basally, hardly expanded posteriorly; callus with 3–4 setae. Legs rather slender; hind femora 4·0–4·5 times as long as broad; spur of mid tibia somewhat shorter than basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing about twice as long as broad; costal cell slightly or hardly shorter than *M*, 9–11 times as long as broad; *SM* with 4–5 dorsal setae; *M* thin, 3·9–4·2 times length of *ST*, its front edge with 10–12 setae; *ST* at 45°–50°, thin proximally but expanding gradually, stigma small and subtriangular; *PM* a stub, 0·3–0·5 length of *ST*; speculum small, not extending below *M*; wing beyond it moderately thickly pilose; cilia 0·3–0·4 length of *ST*. Hindwing subobtuse; cilia about 0·2 breadth of wing. Gaster (Fig. 348) short-ovate, rather flat, slightly shorter than or as long as head plus thorax, about as broad as thorax, 1·25–1·50 times as long as broad, bluntly pointed; tergites following the basal one strongly transverse, last tergite 2–3 times as broad as long; ovipositor sheaths projecting very slightly; longest seta of each cercus hardly 1·5 times length of next longest, curved; tip of hypopygium slightly beyond middle of gaster.

Black with a very weak bluish tinge, mainly on head and thorax. Antennal scape and pedicellus black or fuscous, flagellum brown. Trochanters partly, tips of femora narrowly, and tibiae, testaceous, the mid tibiae often darkened medially, hind tibiae brown to fuscous with bases and tips pale; tarsi testaceous, gradually darkening to fuscous distally. Wings hyaline, venation testaceous. Length 1·25–1·50 mm.

♂. Antenna (Fig. 504) with scape 2·7–2·8 times as long as broad, reaching median ocellus, with ventral plaque 0·36–0·38 length of scape; pedicellus plus flagellum 1·25–1·40 times breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, about 1·5 times length of F1; funicle slightly stouter than pedicellus, filiform; F1 shorter than F2, subquadrate, following segments equal in length, F2 1·4–1·8 times, F2 F3 1·6–1·9 times, F4 1·6–1·9 times as long as broad; clava not broader than funicle, as long as or slightly longer than F3 plus F4, 3·7–4·0 times as long as broad, with C1 and C2 subequal in length, each 1·4–1·6 times as long as broad, C3 shorter; whorled setae not very long, those of F1 reaching slightly beyond tip of F2. Genitalia (Fig. 621).

MATERIAL EXAMINED

Many ♂, ♀. **Austria**, **Czechoslovakia**, **France**, **Germany**, **Hungary**, **Israel**, **Italy**, **Turkey**, **U.S.S.R.** Also recorded by Domenichini (1966*b*: 41) from **Iran**, **Kashmir** and **Morocco** (material not examined).

HOSTS. *Chilocorus bipustulatus* L., *C. bijugus* Mulsant, *Coccinella septempunctata* L., *Exochomus quadripustulatus L.*, *Scymnus subvillosus* Goeze.

Aprostocetus (Aprostocetus) bruzzonis (Masi)

(Figs 395–397, 525, 637)

Tetrastichus Bruzzonis Masi, 1930: 26–32. Syntypes ♂ ♀, ITALY: Verona, San Bonifacio (*G. Mori*) (MCSN) [not examined].

Tetrastichus bruzzonei Masi; Menozzi, 1942: 1–211; Domenichini, 1966*a*: 148; 1966*b*: 21; Kostjukov, 1978*b*: 452. [Invalid emendation.]

Aprostocetus bruzzonii (Masi) Graham, 1961*b*: 59. [Invalid emendation.]

♀. Head hardly broader than mesoscutum, 2·5 times as broad as long; POL 1·30–1·45 OOL, OOL fully twice OD. Eyes 1·35 times as long as broad, separated by slightly more than their length. Malar space 0·45–0·55 length of eye. Mouth 1·15 malar space. Antenna (Fig. 395) with scape 0·7–0·8 length of eye, just reaching median ocellus; pedicellus plus flagellum 1·3–1·4 times breadth of mesoscutum; pedicellus 2·0–2·3 times as long as broad, virtually as long as F1; funicle slightly stouter than pedicellus, filiform; funicular segments equal or subequal in length, F1 1·9–2·1 times, F2 1·8–2·2 times, F3 1·70–2·25 times as long as broad; clava hardly broader than F3, somewhat longer than F2 plus F3, 3·8–4·0 times as long as broad, with C1 about 1·6 times as long as broad, C2 and C3 progressively shorter, spine at least 0·75 length of C3, with apical seta about 0·5 length of spine; sensilla not very numerous, uniseriate, slender, with moderately long bases and rather long projecting blades. Thorax 1·3–1·4 times as long as broad; propodeal slope about 60°. Pronotum short. Mid lobe of mesoscutum 1·2–1·4 times as broad as long, moderately convex and moderately shiny, reticulation excessively fine, lightly engraved, with areoles 3–4 times as long as broad; median line extremely fine or obsolescent; 3–4 adnotaular setae on each side. Scutellum 1·3–1·5 times as broad as long, moderately convex; submedian lines very slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae subequal, their length about 0·7 distance between submedian lines, anterior pair about in middle. Dorsellum 2·0–2·5 times as broad as long. Propodeum (Fig. 396) medially fully as long as or slightly longer than dorsellum, its hind corners sharp and nearly rectangular; surface with moderately fine, slightly raised reticulation; median carina thin and sharp, not foveate basally, hardly expanded posteriorly. Legs rather slender; hind femora fully 4 times as long as broad; spur of mid tibia 0·85–0·95 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·20–2·25 times as long as broad; costal cell very slightly shorter than *M*, 10·0–12·5 times as long as broad; *SM* with (2–) 3–4 dorsal setae; *M* somewhat thick proximally but tapering distad, 3·3–4·0 times length of *ST*, its front edge with 8–11 setae; *ST* at 45°–50° thin proximally, stigma small and oblong or subcircular; *PM* absent; speculum small, not extending below *M*; wing beyond it rather thickly pilose; cilia 0·4–0·5 length of *ST*. Hindwing bluntly pointed; cilia 0·35–0·40 breadth of wing. Gaster (Fig. 397) subcircular, hardly longer but at least somewhat broader than thorax, 1·05–1·30 times as long as broad, its apex forming a right or obtuse angle; last tergite about twice as broad as long; ovipositor sheaths not projecting (in ventral view hardly reaching tip of last tergite); longest seta of each cercus fully twice length of next longest, much twisted, directed straight backwards.

Black; antennae brownish to fuscous. Fore and mid coxae sometimes more or less testaceous distally, other yellowish to testaceous parts are fore and mid femora broadly in distal part, or wholly, hind femora narrowly in distal part, all tibiae; tarsi either mainly testaceous and darker at tips, or pale at base, darkening gradually to tips. Wings subhyaline, venation yellowish to testaceous. Length 1·0–1·2 mm.

♂. Antenna (Fig. 525) with scape about 0·9 length of eye, reaching vertex, 2·4–2·7 times as long as broad, with ventral plaque 0·27–0·37 length of scape; pedicellus plus flagellum 1·50–1·65 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, 1·4–1·7 length of F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2, hardly longer than broad, following segments subequal in length, each 2·0–2·3 times as long as broad; clava not broader than F4, hardly longer than F3 plus F4, with C1 and C2 subequal in length, each about 1·6 times as long as broad, C3 much shorter; whorled setae moderately long, those of F1 reaching somewhat beyond tip of F2. Genitalia (Fig. 637).

MATERIAL EXAMINED

5 ♂, 11 ♀. **Czechoslovakia**, **Great Britain**, **Hungary**, **Italy**, **Netherlands**, **Sweden**, **Canada**.

HOSTS. *Cassida vittata* de Villers, *C. rubiginosa Müller*.

Aprostocetus (Aprostocetus) subplanus sp. n.

(Fig. 199)

♀. Head not quite as broad as mesoscutum, 2·7–2·8 times as broad as long; POL 1·15–1·25 OOL, OOL about 2·2 times OD. Eyes about 1·25 times as long as broad, separated by about 1·5 times their length. Malar space 0·6 length of eye, sulcus weakly curved and with a fovea which extends 0·25–0·33 its length. Mouth about 1·4 times malar space. Antenna (Fig. 199) with scape 0·65 length of eye, not quite reaching median ocellus; pedicellus plus flagellum not quite equal to breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, about as long as F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing gradually in length, F1 about twice, F2 1·4–1·6 times as long as broad, F3 quadrate or very slightly longer than broad; clava slightly broader than F3, somewhat longer than F2 plus F3, 2·7–3·0 times as long as broad, bluntly pointed, with C1 and C2 not or hardly longer than broad, spine about 0·33 length of C3, with apical seta as long as spine; sensilla moderately numerous, irregularly uniseriate, moderately long, decumbent with tips projecting slightly. Thorax 1·45–1·60 times as long as broad, extremely weakly arched dorsally, the dorsellum and propodeum sloping only slightly. Pronotum short. Mid lobe of mesoscutum slightly broader than long, nearly flat, shiny, areoles of reticulation mostly 2–3 times as long as broad; median line absent; 4–5 adnotaular setae on each side. Scutellum 1·4–1·5 times as broad as long, nearly flat discally but curving downwards at the sides, sculptured like mesoscutum; submedian lines very weak, about twice as far from each other as from sublateral lines, enclosing a space 1·3–1·5 times as long as broad; setae equal, their length about 0·5 distance between submedian lines, anterior pair about in middle. Dorsellum nearly 3 times as broad as long. Propodeum medially slightly longer than dorsellum, shiny, with extremely fine weak reticulation; median carina weak, only slightly raised, broadening in posterior third; spiracles moderate-sized, oval, separated by less than half their length from metanotum; callus with 5–7 setae. Legs of medium length and thickness; hind coxae strongly oblique, shiny, with excessively fine, obsolescent reticulation; hind femora about 3·7 times as long as broad; spur of mid tibia only slightly shorter than basitarsus, fourth tarsomere as long as basitarsus. Forewing 2·2–2·3 times as long as broad; costal cell distinctly shorter than *M*, 8–9 times as long as broad, its lower surface with a single or double row of setae; *SM* with 5–6 dorsal setae; *M* not thick, 3·5–4·2 times length of *ST*, its front edge with 15–19 setae; *ST* at about 45°, very thin proximally but expanding gradually into the small narrow stigma; *PM* rudimentary or a short stub; speculum rather small, not extending below *M*; wing beyond it moderately thickly pilose, more densely distad; cilia very short. Hindwing rounded; cilia about 0·15 breadth of wing. Gaster short-ovate, flattened, hardly longer but somewhat broader than thorax, 1·2–1·5 times as long as broad, bluntly pointed owing to the slight projection made by the very small last tergite, which is much broader than long; ovipositor sheaths concealed in dorsal view; longest seta of each cercus about 1·5 times length of next longest, kinked; tip of hypopygium slightly beyond half length of gaster.

Black, non-metallic; mandibles reddish; pedicellus reddish beneath and at tip; trochantelli testaceous, also tips of all femora moderately broadly; tibiae testaceous, more or less infuscate medially, mid and hind pairs sometimes blackish except bases and tips; tarsi reddish, gradually darkening to fuscous at tips, or fuscous with only their bases paler. Tegulae blackish. Wings subhyaline, venation testaceous to brownish. Length 2·2–2·3 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Praha-Kunratice, 11.x.1962 (*Bouček*) (BMNH).
Paratypes. 2 ♀, same locality as holotype, 10.x.1962 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) phloeophthori Graham

(Fig. 356)

Aprostocetus phloeophthori Graham, 1983: 32–33. Holotype ♀, GREAT BRITAIN: England, Berkshire, Silwood Park, 27.ii.1957 (*M. R. Smith*) (BMNH) [examined].

♀. A full description has been published (Graham, 1983*a*). Antenna (Fig. 356).

♂. Unknown.

MATERIAL EXAMINED
12 ♀. **France**, **Great Britain**, **Madeira**.

HOST. Not definitely ascertained but the original British material was reared from galleries made by *Phloeophthorus rhododactylus* (Marsham).

Aprostocetus (Aprostocetus) hedqvisti sp. n.

(Fig. 355)

♀. Head nearly 3 times as broad as long; POL about 1·5 times OOL. Malar sulcus with a small fovea below eye. Antenna (Fig. 355) with pedicellus about 2·5 times as long as broad; F1 about 3 times, F2 2·8 times, F3 2·4 times as long as broad; clava about 3 times as long as broad. Thorax slightly longer than in *phloeophthori*. Mid lobe of mesoscutum as long as broad, not very shiny, with excessively fine but rather sharply engraved reticulation having most areoles about 3 times as long as broad; 4 adnotaular setae on each side. Scutellum with submedian lines about equidistant from each other and from sublateral lines, enclosing a space about twice as long as broad; anterior pair of setae slightly behind middle. Propodeum; median carina not much raised, very broad, becoming even broader posteriorly. Legs rather long and slender, tibiae and tarsi very slender; spur of mid tibia slightly less than half length of basitarsus, fourth tarsomere only slightly more than half length of basitarsus. Forewing not reaching beyond tip of gaster; *SM* with 5–6 dorsal setae; *M* rather thin, 5 times length of *ST*, its front edge with 23 setae. Hindwing obtuse; cilia about 0·15 breadth of wing. Gaster lanceolate, about 1·5 times as long as head plus thorax, slightly narrower than thorax, nearly 3·5 times as long as broad, acuminate; ovipositor sheaths projecting by about one-third length of last tergite, the latter about 1·8 times as long as broad; gaster slightly compressed and keeled ventrally. Other characters as in *phloeophthori*.

Body black, also tegulae, antennae, coxae and greater part of femora; tips of fore and mid femora broadly, of hind femora narrowly, and all tibiae, reddish testaceous; tarsi pale testaceous with pretarsi brown. Length 2·8 mm.

♂. Unknown.

MATERIAL EXAMINED
1 ♀. Holotype ♀, **Sweden**: Gotska Sandön, 28.vi.1953 (*K.-J. Hedqvist*) (KJH).

HOST. *Tomicus minor* (Hartig).

Aprostocetus (Aprostocetus) capnopterus sp. n.

(Figs 246, 247)

♀. Head almost as broad as mesoscutum (but somewhat collapsed); POL 1·55–1·70 times OOL, OOL nearly twice OD. Eyes about 1·4 times as long as broad, separated by at least 1·3 times their length. Malar space about 0·66 length of eye, sulcus moderately curved. Mouth slightly greater than malar space. Antenna (Fig. 246) with scape reaching about level of middle of median ocellus; pedicellus plus flagellum 1·00–1·25 times breadth of mesoscutum; pedicellus 2·1–2·5 times as long as broad, slightly shorter than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing gradually in length, F1 1·75–2·40 times, F2 1·5–1·9 times, F3 1·2–1·6 times as long as broad; clava slightly broader than F3, as long as F2 plus F3, 2·5–3·0 times as long as broad, obtusely pointed, with C1 as long as broad, C2 and C3 progressively shorter, spine about 0·2 length of C3, with apical seta slightly longer than spine; sensilla rather sparse, uniseriate, about two-thirds as long as the segments, slender, with long decumbent bases and shorter projecting blades. Thorax 1·15–1·25 times as long as broad; propodeal slope 40°–45°. Pronotum very short. Mid lobe of mesoscutum 1·25–1·50 times as broad as long, rather weakly convex, moderately shiny, reticulation with most areoles 2–3 times as long as broad, some longer; median line extremely fine but traceable in some lights; 3–4 adnotaular setae on each side, the hindmost as long as scutellars. Scutellum 1·6–2·0 times as broad as long, moderately strongly convex, more finely reticulate than mesoscutum and, outside the submedian lines, with longer areoles; submedian lines equidistant from each other and from sublateral lines, or slightly nearer the latter, enclosing a space 1·7–1·9 times as long as broad; setae subequal, their length nearly as great as distance between submedian lines, anterior pair well behind middle. Dorsellum lunate, about 3 times as broad as long. Propodeum 3·5–4·0 times as broad as its length at the sides, medially about as long as dorsellum, shiny, with traces of excessively fine obsolescent reticulation; median carina slightly raised, foveate at base, slightly expanded at posterior end. Legs rather short; hind coxae strongly oblique, slightly more than twice as long as broad, shiny, sculptured like propodeum; femora stout, hind pair about 3·5 times as long as broad; spur of mid tibia fully as long as, or even a little longer than the basitarsus, fourth tarsomere fully as long as basitarsus. Forewing (Fig. 247) 2·20–2·25 times as long as broad; costal cell about as long as *M*, 10–11 times as long as broad; *SM* with 3–4 dorsal setae; *M* somewhat thick, 3·9–4·3 times length of *ST*, its front edge with 10–12 rather long setae; *ST* at about 50°, slightly curved, not very thin, expanded in distal half to form a small subrectangular stigma; *PM* a short stub; speculum moderate-sized, extended as a very narrow strip below *M* and *ST*; a bare area above *ST*; wing beyond speculum moderately thickly and nearly uniformly pilose; cilia 0·5–0·9 length of *ST*. Hindwing slightly pointed; cilia 0·33 breadth of wing. Gaster ovate, slightly longer than head plus thorax, slightly broader than thorax, 1·5–1·7 times as long as broad, acute but not acuminate; last tergite from slightly to nearly twice as broad as long; ovipositor sheaths projecting to 0·25–0·33 length of last tergite; longest seta of each cercus about 1·5 times length of next longest, kinked; tip of hypopygium at about 0·5 length of gaster.

Body in Greek ♀ black, non-metallic, with scapular flanges testaceous; in ♀ from Portugal with head testaceous, at most the occipital surface partly fuscous; thorax testaceous with sutures darker, in one ♀ the propodeum and sides of thorax brownish; gaster fuscous to black; tegulae brownish. Antennal scape black, pedicellus and flagellum fuscous. Legs black with fore tarsi subtestaceous basally, mid and hind tarsi whitish with third segment brownish, fourth fuscous; in Portuguese ♀ the coxae are subtestaceous (but appear to be teneral). Wings hyaline, forewing (Fig. 247) with a large median subcircular brown cloud which nearly touches *M* and *ST* and extends to near anal margin; *ST* paler basally. Length 1·0–1·6 mm.

♂. Unknown.

MATERIAL EXAMINED

5 ♀. Holotype ♀, **Greece**: Kikládes, Santorini, Oea, 15–20.xii.1974 (*A. C. & W. N. Ellis*) (ITZ).

Paratypes. **Greece**: 1 ♀. Kikládes, Santorini, Phera, 24.xi.–6.xii.1974 (A. C. & W. N. Ellis) (ITZ); 1 ♀, Santorini, Thira, Imeroviglion, 26.xi.–8.xii.1974 (*A. C. & W. N. Ellis*) (ITZ). **Portugal**: 2 ♀, Estremadura, Ca. da Caparica, 11.ix.1979 (*A. van Harten*) (ITZ).

HOST. Unknown.

COMMENT. The island of Thira was largely destroyed in the great volcanic eruption of 1450 B.C., so that *A. capnopterus* must have colonized it after that time.

Aprostocetus (Aprostocetus) flavifrons (Walker)

(Figs 366, 455, 632, 684)

Tetrastichus flavifrons Walker, 1849: 209; Domenichini, 1966*a*: 171; 1966*b*: 31; Graham, 1979: 284. Lectotype ♂, MADEIRA (BMNH), designated by Graham (1979: 284) [examined].

Tetrastichus Silius Walker, 1849: 209. Lectotype ♂, MADEIRA (BMNH), designated by Graham (1979: 284) [examined]. [Synonymized by Domenichini, 1966*a*: 171.]

Tetrastichus socius Walker, 1872: 128. Lectotype ♂, MADEIRA (BMNH), designated by Graham (1979: 284) [examined]. [Synonymized by Domenichini, 1966*b*: 31; 1966*a*: 171.]

Tetrastichus subpictus Walker, 1872: 129. Lectotype ♀, MADEIRA (BMNH), designated by Graham (1979· 284) [examined]. [Synonymized by Domenichini, 1966*b*: 31.]

Aprostocetus flavifrons (Walker) Graham, 1983*a*: 38.

♀. Head about as broad as mesoscutum, about 2·3 times as broad as long; POL 1·25–1·45 OOL, OOL 1·7–2·0 OD. Eyes 1·35 times as long as broad, separated by a little more than their length, moderately thickly clothed with extremely short pubescence. Malar space 0·55 length of eye, sulcus slightly curved. Mouth 1·3 malar space. Setae of vertex blackish, length of longest about equal to OD. Antenna (Fig. 366) with scape 0·85 length of eye, almost reaching vertex; pedicellus plus flagellum hardly as great as breadth of mesoscutum in large ♀, a little greater in small ♀; pedicellus 2·2–2·5 times as long as broad, as long as or hardly longer than F1; funicle proximally very slightly stouter than pedicellus, thickening slightly distad, its segments decreasing in length, F1 2·2–2·5 times, F2 1·5–1·8 times, F3 1·25–1·40 times as long as broad; clava somewhat broader than F3, from nearly as long as to slightly longer than F2 plus F3, 2·0–2·4 times as long as broad, its segments decreasing in length, all slightly transverse, spine about 0·5 length of C3, with apical seta distinctly shorter than spine; sensilla sparse on F1, more numerous on F2, F3 and claval segments, uniseriate, about half as long as the segments, with long decumbent bases and shorter projecting blades. Thorax 1·4–1·5 times as long as broad; propodeal slope 60°. Setae of thorax black. Pronotum short. Mid lobe of mesoscutum slightly broader than long, moderately convex, shiny, reticulation with most areoles 3–4 times as long as broad; median line fine but usually traceable in some lights; 3–6 strong, suberect adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, moderately convex, sculptured rather more finely than mesoscutum; submedian lines parallel, distinctly nearer to sublateral lines than to each other, enclosing a space 1·75–2·00 times as long as broad; setae equal, strong, their length slightly less than distance between submedian lines, anterior pair well behind middle and 3–4 times as far from front edge of sclerite as from posterior setae. Dorsellum oval, 2·2–2·5 times as broad as long. Propodeum medially nearly or quite as long as dorsellum, very shiny, with extremely fine superficial reticulation; median carina raised, with triangular fovea at base, expanding in posterior half. Legs of medium length and thickness; hind coxae oblique, about 2·5 times as long as broad, shiny; hind femora about 4 times as long as broad; spur of mid tibia a little shorter than basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·15–2·30 times as long as broad; costal cell shorter than *M*, 8–10 times as long as broad; *SM* with 3–5 dorsal setae; *M* not thick, 4·5–5·0 times length of *ST*, its front edge with 9–14 setae; *ST* at 45°–50°, very slightly curved, thin proximally but gradually expanding into the small stigma; *PM* a short stub or rudimentary; speculum small, extending as a very narrow wedge below *M*, closed or partly open below; wing beyond moderately thickly pilose; cilia 0·25–0·33 length of *ST*. Hindwing obtuse; cilia 0·15–0·30 breadth of wing. Gaster long-ovate, slightly longer than head plus thorax and slightly broader than thorax, 1·8–2·3 times as long as broad, acute and slightly acuminate; last tergite as broad as or slightly broader than long; ovipositor sheaths projecting by 0·25–0·45 length of last tergite; longest seta of each cercus nearly twice length of next longest, sinuate; tip of hypopygium at about 0·5 length of gaster. Hypopygium (Fig. 684).

Black, usually with some yellow markings, the dark parts of dorsum usually with a very weak bronze tinge. Some specimens, especially very small ones, have only scapular flanges yellowish. Usually, however, the mouth-edge is testaceous, whilst in most females yellowish markings appear as follows: inner and outer orbits, a spot in each front angle of mid lobe of mesoscutum, in paler forms genae and temples, face and frons more or less, vertex laterad of ocellar triangle, marks on hind edge of pronotum which may unite to form a transverse band, hind edge of scapulae more or less broadly, a pair of spots on mesoscutum just in front of scutellum, sometimes united, a spot on each side of scutellum outside sublateral lines, a spot on hind part of each axilla, lateral panels of metanotum. Occasionally the last gastral tergite has a testaceous median spot. Antennae testaceous, clava tending to be darker; scape black, more or less testaceous distally; pedicellus blackish dorsally in distal basal half. Coxae black, legs otherwise testaceous with femora brownish over proximal half in pale ♀, more often black over proximal half to three-quarters; fore tarsi brown, mid and hind tarsi brownish distally. Tegulae testaceous, hind edge darker, more broadly so in dark specimens. Forewings nearly always yellowish in the middle, especially in large ♀, venation yellowish testaceous. Length 1·35–2·40 mm.

♂. Antenna (Fig. 455) with scape 0·87 length of eye, nearly reaching vertex, 2·5–3·0 times as long as broad, with ventral plaque fully one-third length of scape; pedicellus plus flagellum 1·20–1·33 times breadth of mesoscutum; pedicellus 2·0–2·5 times as long as broad, slightly longer than F1; funicle proximally hardly as stout as pedicellus but thickening slightly distad, its segments decreasing very slightly in length, F1 1·7–2·2 times, F2 1·7–2·2 times, F3 1·5–1·8 times, F4 1·2–1·7 times as long as broad; clava slightly broader than F4, distinctly longer than F3 plus F4, 2·5–3·3 times as long as broad, with C1 about as long as broad, C2 slightly longer and slightly longer than broad, C3 almost as long as C1, spine 0·33 length of C3 with apical seta slightly longer than spine; setae of flagellum relatively short, mostly curved; no whorls of long dark setae. Genitalia (Fig. 623).

Thorax tending to be less extensively yellow-marked as in darker ♀, sometimes wholly black. Antennae testaceous with ventral plaque of scape fuscous; pedicellus often dark proximally, clava sometimes brownish.

I took a gynandromorph with ♂ antennae and ♀ gaster in Madeira, at Queimadas, 11.viii.1982.

MATERIAL EXAMINED

Many ♂, ♀. **Madeira**: a common species in forest, from about 300–1300 m. Also recorded from **Italy** by Domenichini (1966*b*: 31) but I have not examined his material.

HOST. *Cerodontha pygmaea* (Meigen) on *Brachypodium sylvaticum* (Gramineae) (Graham, 1983*a*).

Aprostocetus (Aprostocetus) nubigenus Graham

Aprostocetus nubigenus Graham, 1986: 3. Holotype ♂, MADEIRA: Balcões de Ribeiro Frio, 21.viii.1985 (*E. M. Graham*) (BMNH) [examined].

Both sexes of this new species have been fully described. I have interpolated an extra couplet in both my key to females and my key to males of *Aprostocetus*, to indicate their distinguishing characters.

MATERIAL EXAMINED

2 ♂, 4 ♀. **Madeira**: 2 ♂, 4 ♀ (holotype, paratypes) (BMNH, MVG).

HOST. Unknown.

***Aprostocetus (Aprostocetus) silaceus* sp. n.**

(Fig. 350)

♀. Head hardly as broad as mesoscutum, 2·5 times as broad as long; POL about 1·1 OOL, OOL nearly twice OD. Eyes 1·17 times as long as broad, separated by 1·4 times their length, almost bare. Malar space 0·7 length of eye, sulcus slightly curved. Mouth slightly greater than malar space. Setae of head pale, those of vertex shorter than OD. Antenna (Fig. 350) with scape virtually as long as eye, reaching slightly above vertex; pedicellus plus flagellum 1·35 times breadth of mesoscutum; pedicellus 2·35 times as long as broad, about 0·6 length of F1; funicle proximally slightly stouter than pedicellus, not thickening distad, its segments decreasing in length, F1 3·4 times, F2 2·6 times, F3 2·3 times as long as broad; clava slightly broader than F3, distinctly shorter than F2 plus F3, 3·7 times as long as broad, with C1 somewhat longer than broad, C2 and C3 progressively shorter, spine 0·45 length of C3; sensilla moderately numerous, triseriate on F1 and F2, irregularly biseriate on F3, biseriate on C1, rather short though slender, subdecumbent with short projecting blades. Thorax 1·45 times as long as broad; propodeal slope 60°. Setae of thorax fuscous. Pronotum very short. Mid lobe of mesoscutum about as long as broad, shiny, reticulation excessively fine, engraved, almost obsolescent, most areoles 2–3 times as long as broad; median line obsolescent; 5 adnotaular setae on each side. Scutellum 1·2 times as broad as long, moderately convex, sculptured like mesoscutum but with slightly shorter areoles; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space 2·1 times as long as broad; setae subequal, anterior pair behind middle and twice as far from front edge of scutellum as from posterior setae. Dorsellum 2·2 times as broad as long, hind edge obtusely angulate. Propodeum medially as long as dorsellum; median carina sharp, with triangular basal fovea, slightly expanded posteriorly. Legs rather short and thick; hind coxae twice as long as broad, with hind edge strongly curved; hind femora 3·4 times as long as broad; spur of mid tibia 0·7 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·5 times as long as broad; costal cell shorter than *M*, 12 times as long as broad; *SM* with 6–7 dorsal setae; *M* thin, 4 times length of *ST*, its front edge with 14 setae; *ST* at 50°, thin proximally but expanding gradually, stigma rather small; *PM* a short stub; speculum small, not extending below *M*, wing beyond it moderately thickly pilose; cilia 0·38 length of *ST*. Hindwing obtuse; cilia 0·2 breadth of wing. Gaster ovate, slightly longer than head plus thorax, slightly broader than thorax, 1·6 times as long as broad, very slightly acute; last tergite broader than long; ovipositor sheaths not projecting; longest setae of each cercus twice length of next longest, kinked; tip of hypopygium slightly beyond middle of gaster.

Testaceous with vertex, dorsellum, parts of prepectus, mesoscutum and scutellum inclining to yellowish; propodeal carina and median part of hind edge blackish; fovea of basal tergite of gaster infuscate, gaster beyond middle mainly fuscous; antennal scape slightly darkened at tip, flagellum brown; pretarsus of all legs fuscous. Tegulae yellow. Wings hyaline, venation yellowish testaceous. Length 2·3 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Greece**: Peloponnisos, Petalidion, 27.viii.1979 (*Bouček*) (BMNH).

HOST. Unknown.

COMMENT. *A. silaceus* is a relatively distinct species by reason of its long antennal scape, relatively long funicular segments and elongate clava (but with the latter distinctly shorter than F2 plus F3), mainly testaceous body and wholly testaceous legs.

Aprostocetus (Aprostocetus) strobilanae (Ratzeburg) **comb. rev.**

(Figs 259, 486, 656)

Eulophus strobilanae Ratzeburg, 1844*b*: 166. Syntypes ♀, GERMANY (destroyed). NEOTYPE ♀, WEST GERMANY: Bayern, Oberstdorf, reared i.1979 from spruce cone (*B. Nübel*) (ITZ), here designated [examined].
Trichoceras erythrophthalmus Ratzeburg, 1844*b*: 171. Syntypes ♂, GERMANY (destroyed). NEOTYPE ♂, WEST GERMANY: same data as neotype of *strobilanae* (ITZ), here designated [examined].
Entedon strobilanae (Ratzeburg) Ratzeburg, 1848: 167.
Geniocerus erythrophthalmus (Ratzeburg) Ratzeburg, 1848: 175, pl. 3, fig. 2.
Aprostocetus strobilanae (Ratzeburg) Trägårdh, 1917: 1190–1198; Holste, 1921: 125–160.
Geniocerus strobilanae (Ratzeburg) Erdös, 1954: 357.
Tetrastichus strobilanae (Ratzeburg) Domenichini, 1966*a*: 165; 1966*b*: 49; Erdös, 1971: 234–235.

The original material of neither *strobilanae* nor *erythrophthalmus* is present in the remnants of the Ratzeburg collection (NM) and is presumed to have been destroyed in 1945. The ♂ specimen named as *erythrophthalmus* and supposedly from Ratzeburg's collection, referred to by me (Graham, 1961*b*: 54) has proved not to be a syntype. At my suggestion, M. J. Gijswijt selected two specimens from his reared German material which I here designate as neotypes of *strobilanae* and *erythrophthalmus*.

♀. Head not quite as broad as mesoscutum, 2·2–2·5 times as broad as long; temples 0·17–0·25 length of eyes, curved; POL 1·08–1·20 OOL, OOL 1·8–2·0 OD. Eyes 1·4 times as long as broad, separated by 1·15–1·30 times their length. Malar space 0·55 length of eye, sulcus with subtriangular fovea extending about 0·4 its length. Mouth about 1·5 malar space. Antenna (Fig. 259) with scape 0·82–0·85 length of eye, not reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·3–2·8 times as long as broad, slightly shorter than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing slightly in length, F1 2·2–2·9 times, F2 1·6–2·2 times, F3 1·5–1·7 times as long as broad; clava slightly broader than F3, nearly or about as long as F2 plus F3, bluntly pointed, with C1 quadrate to slightly transverse, C2 somewhat shorter and transverse, C3 very short, spine extremely short, with apical seta slightly longer than spine; sensilla moderately numerous, uniseriate, long and slender, subdecumbent with tips raised. Thorax 1·10–1·35 times as long as broad; propodeal slope 40°–45°. Pronotum short. Mid lobe of mesoscutum as broad as or slightly broader than long, moderately convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line extremely fine and superficial; 3–5 adnotaular setae on each side. Scutellum 1·25–1·50 times as broad as long, moderately convex, sculptured like mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length almost equal to distance between submedian lines, anterior pair slightly behind or in middle. Dorsellum about 4 times as broad as long. Propodeum strongly transverse, broadly and deeply emarginate, medially at least very slightly shorter than dorsellum; shiny, with very fine engraved reticulation; median carina obsolescent anteriorly but represented posteriorly by a shiny crescent bordering petiole; callus with 3–6 setae. Legs of medium length and thickness; hind coxae nearly 2·5 times as long as broad; hind femora 4·5 times as long as broad; spur of mid tibia 0·65 length of basitarsus, fourth tarsomere hardly longer than basitarsus. Forewing 2·2–2·5 times as long as broad; costal cell shorter than *M*, 8–12 times as long as broad; *SM* with 3–5 dorsal setae; *M* rather thin, 4·5–5·3 times length of *ST*, its front edge with 14–19 setae; *ST* at 45°–50°, very thin proximally but expanding at about half its length into the small oblong stigma; *PM* a short stub; speculum small, not extending below *M*; wing beyond moderately thickly pilose; cilia 0·15–0·30 length of *ST*. Hindwing rounded or obtuse; cilia 0·15–0·25 breadth of wing. Gaster lanceolate, 2·0–2·5 times length of head plus thorax, usually slightly narrower than thorax, (2·6–) 3·0–4·8 times as long as broad, acuminate; last tergite 1·5–2·3 times as long as broad; ovipositor sheaths projecting by 0·2–0·35 length of last tergite; longest seta of each cercus 1·5 times length of next longest, hardly sinuate; tip of hypopygium at about 0·4 length of gaster inclusive of ovipositor.

Body non-metallic, black (rarely with a very faint bluish tinge on some parts); mouth-edge sometimes narrowly testaceous, dorsellum occasionally obscurely so. Antennal scape and pedicellus black, tip of latter often testaceous; flagellum fuscous. Coxae black; trochanters pale or partly infuscate; femora black, their tips narrowly to broadly testaceous; tibiae testaceous, usually at least slightly infuscate just beyond middle, sometimes mainly fuscous; fore tarsi brown, mid and hind tarsi testaceous darkening to fuscous at tips, or mainly dark. Wings hyaline, venation testaceous to brown. Length 2·0–3·6 mm.

♂. Antenna (Fig. 486) with scape 0·85–0·88 length of eye, 2·25–2·50 times as long as broad, with ventral plaque 0·60–0·65 length of scape; pedicellus plus flagellum 1·85–1·95 breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, hardly shorter than F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 slightly shorter than F2, 1·5–2·0 times as long as broad, F2 2·0–2·7 times, F3 2·6–3·2 times, F4 2·9–3·6 times as long as broad; clava hardly broader than F4, somewhat longer than F3 plus F4, 6·5–7·0 times as long as broad, with C1 and C2 each at least twice as long as broad, C3 elongate; whorled setae moderately long, those of F1 reaching to middle of F3. Genitalia (Fig. 656).

Colour as in ♀.

MATERIAL EXAMINED

11 ♂, many ♀. **Austria**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Poland**, **Sweden**, **Yugoslavia**.

HOSTS. *Kaltenbachiola strobi* (Winnertz) and *Plemeliella abietina* (Seitner). Records of other hosts are probably erroneous (see Domenichini, 1966*b*: 50).

Aprostocetus (Aprostocetus) cracens sp. n.

(Fig. 349)

♀. Head very slightly broader than mesoscutum (slightly collapsed); POL 1·10–1·25 OOL, OOL nearly or about twice OD. Eyes 1·30–1·35 times as long as broad, virtually bare. Malar space 0·55 length of eye, sulcus slightly curved. Mouth about 1·3 malar space. Antenna (Fig. 349) with scape virtually as long as eye, reaching vertex; pedicellus plus flagellum about 1·8 breadth of mesoscutum; pedicellus 2·2–2·4 times as long as broad, half or hardly more than half length of F1; funicle proximally about as stout as pedicellus, hardly thickening distad, its segments decreasing slightly in length, F1 4·7–5·0 times, F2 3·5–3·7 times, F3 2·5–3·3 times as long as broad; clava slightly broader than F3, nearly or about as long as F3 plus half of F2, about 4 times as long as broad, with C1 1·5–1·8 times as long as broad, C2 somewhat shorter, C3 very short, spine fully 0·5 length of F3, with apical seta slightly shorter than spine; sensilla moderately numerous, in 2 rows on each funicular segment (or in 3 rows on F1) and 1 row on each claval segment, very slender but short, with moderately long decumbent base and about equally long blades. Thorax about 1·6 times as long as broad; propodeal slope 45°–50°. Pronotum about 0·3 length of mesoscutum. Mid lobe of mesoscutum slightly longer than broad, moderately convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line extremely fine and weak; 4 adnotaular setae on each side, not very dissimilar in length, hindmost about 0·7 length of scutellars. Scutellum about 1·3 times as broad as long, moderately strongly convex, sculptured more finely than mesoscutum; submedian lines subparallel, slightly nearer to sublateral lines than to each other, enclosing a space nearly or about twice as long as broad; setae subequal, their length almost equal to distance between submedian lines, anterior pair distinctly behind middle. Dorsellum 2·5–2·7 times as broad as long, hind edge evenly curved. Propodeum about 2·5 times as broad as its length at sides, medially slightly longer than dorsellum; median carina with a longitudinal channel in its anterior half, gradually expanding in its posterior half; spiracles separated by about half their length from metanotum. Legs moderately long, somewhat slender; hind femora nearly 4 times as long as broad; spur of mid tibia slightly shorter than basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·6–2·8 times as long as broad; costal cell distinctly shorter than *M*, 16–18 times as long as broad; *SM* with 4–5 dorsal setae; *M* thin, about 5 times length of *ST*, its front edge with 16–19 setae; *ST* at about 50°, thin proximally but expanding gradually, stigma small and narrow; *PM* rudimentary; speculum very small, not extending below *M*; wing beyond moderately thickly pilose; cilia 0·30–0·55 length of *ST*. Hindwing obtuse or subobtuse; cilia 0·25–0·33 breadth of wing. Gaster lanceolate, nearly 1·5 times as long as head plus thorax, about as broad as thorax, 3·4–3·7 times as long as broad; last tergite slightly longer than broad; ovipositor sheaths projecting by 0·25–0·33 length of last tergite; longest seta of each cercus nearly twice length of next longest, kinked; tip of hypopygium at about 0·5 length of gaster.

Body non-metallic, variegated with yellowish testaceous and black. Head testaceous with ocellar triangle, most of occipital surface, large spots on face laterally, sides of frons except orbits, and sometimes a spot on gena, fuscous to black. Thorax fuscous to black with following parts testaceous: sides of mid lobe of mesoscutum more or less (at least in front, is holotype all along), hind part of scapulae broadly, axillae except an anterior spot, sides of scutellum outside sublateral lines, metanotum, sometimes propodeal callus, upper angle of mesopleuron, prosternum, mesosternum partly; sometimes prepectus and mesopleuron more or less. Gaster black, testaceous beneath over proximal third to half and with a faint trace of paler brownish transverse bands on some of the anterior tergites, base of last tergite also tending to be paler than the rest. Antennal scape testaceous, darker dorsally; pedicellus fuscous, testaceous beneath and at tip; flagellum fuscous. Legs testaceous with pretarsi brown; coxae slightly infuscate proximally in one ♀. Tegulae testaceous. Wings hyaline, venation yellowish testaceous. Length 2·00–2·15 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Italy**: Lago Bolsena, 27.viii.1972 (*Bouček*) (BMNH).

Paratypes. **Greece**: 1 ♀, Peloponnisos, Petalidion, 27.viii.1979 (*Bouček*) (BMNH). **Italy**: 1 ♀, same data as holotype.

HOST. Unknown.

Aprostocetus (Aprostocetus) arenarius (Erdös) **comb. rev.**

(Fig. 376)

Geniocerus arenarius Erdös, 1954: 354. Holotype ♀, HUNGARY: Tompa, 21.x.1948 (*Erdös*) (TM) [examined].

Aprostocetus arenarius (Erdös) Graham, 1961*b*: 59.

Tetrastichus arenarius (Erdös) Domenichini, 1966*a*: 172; 1966*b*: 18; Erdös, 1971: 229; Kostjukov, 1978*b*: 460.

♀. Head 1·05–1·15 times as broad as mesoscutum, 2·2–2·4 times as broad as long; POL 1·20–1·25 OOL, OOL nearly twice OD. Eyes 1·20–1·25 times as long as broad, separated by about 1·2 times their length. Malar space 0·6 length of eye, sulcus straight. Mouth 1·2 malar space. Antenna (Fig. 376) with scape 0·85 length of eye, reaching level of middle of median ocellus; pedicellus plus flagellum 1·3–1·7 times breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, somewhat shorter than F1; funicle proximally hardly stouter than pedicellus, thickening very slightly distad, its segments subequal or decreasing very slightly in length, F1 2·6–3·0 times, F2 2·3–2·6 times, F3 1·8–2·3 times as long as broad; clava hardly broader than F3, 3·2–3·5 times as long as broad, spine 0·6–0·8 length of C3, with apical seta hardly half length of spine; sensilla moderately numerous, in 2 irregular rows on each segment, the distal ones mostly decumbent, basal ones with their apical half forming a projecting blade. Thorax (1·5–) 1·6–1·9 times as long as broad; propodeal slope about 50°. Pronotum 0·25–0·33 length of mesoscutum. Mid lobe of mesoscutum as long as or very slightly longer than broad, convex, shiny, reticulation with most areoles 3–4 (–5) times as long as broad; median line fine, occasionally absent; 4 pale and short adnotaular setae on each side, hindmost shorter than scutellar setae. Scutellum 1·10–1·35 times as broad as long, moderately convex, sculptured like mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, tending to converge slightly caudad, enclosed space 2·1–2·5 times as long as broad; length of posterior setae about 0·8 distance between submedian lines, anterior pair slightly shorter and placed a little behind middle. Dorsellum 2·0–3·1 times as broad as long. Propodeum medially 1·25–1·60 times as long as dorsellum, shiny, with extremely fine weak engraved reticulation; median carina rather thin, sharp, normally divided longitudinally by a sublinear furrow which extends from its anterior end to at least 0·75 its length; spiracles rather small, separated by about half their length from metanotum. Legs of medium length and thickness; hind femora 3·5 times as long as broad; spur of mid tibia 0·6 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·35–2·70 times as long as broad; costal cell shorter than *M*, 12–14 times as long as broad, the row of setae on its lower surface sometimes broken medially; *SM* with (3–) 4 dorsal setae; *M* not very thick, 4·5–5·0 times length of *ST*, its front edge with 13–15 setae; *ST* at 40°–50°, thin proximally, expanding beyond middle, stigma small and oblong; *PM* a short stub, or rudimentary; speculum moderate-sized, extending as a narrow strip some distance below *M* and sometimes reaching *ST*; wing beyond rather sparsely pilose, more thickly distad; cilia 0·3–0·5 length of *ST*. Hindwing obtuse or subobtuse; cilia 0·2–0·3 breadth of wing. Gaster long-ovate, about as long as head plus thorax, 1·9–2·1 times as long as broad, acute but not acuminate; last tergite somewhat broader than long; ovipositor sheaths projecting very slightly; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium at about 0·5 length of gaster.

Body non-metallic, black with testaceous and yellowish markings. Head yellow or testaceous with ocellar triangle and a large area extending from it on to occipital surface, sometimes also frons more or less and a media median spot below toruli, black. Thorax black with following parts testaceous or yellow: sides of pronotum, a stripe along each side of mid lobe of mesoscutum, sometimes joined posteriorly by a band just in front of scutellum; sometimes whole mesoscutum yellow except an anterior spot; scapulae yellow except an anterior spot; scutellum sometimes yellow posteriorly, or wholly so except an anterior subtriangular spot; prepectus yellow, upper angle of mesopleuron broadly so, sometimes also mesosternum more or less, usually dorsellum laterally or wholly. Gaster black with petiole usually yellowish, also ventral surface over proximal half or more, sometimes pale lateral spots on anterior tergites and rarely obscure pale transverse bands. Antennal scape varying from yellow with dorsal edge dark, to black with ventral edge pale; pedicellus brown to black, usually pale beneath; flagellum brownish testaceous to fuscous. Legs yellow with hind coxae partly to mainly, mid coxae sometimes partly, fuscous; hind femora sometimes more or less infuscate in proximal half, mid femora occasionally a little darkened at base; fore tarsi fuscous with base sometimes paler, mid and hind tarsi with fourth segment fuscous, third sometimes brownish. Tegulae yellowish. Wings hyaline, venation yellowish to testaceous. Length 1·40–1·95 mm.

♂. Unknown.

MATERIAL EXAMINED

14 ♀. **Corsica**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Italy**, **Yugoslavia**.

HOST. Unknown.

COMMENTS. This species appears to be associated with grasses in dry habitats.

A mixed series now stands in the Erdös collection under *arenarius*. Only the holotype, and a ♀ from Vendvidék, 11.vii.1961, belong to it. Three other females are *phragmiticola*, a fourth is probably *citrinus*.

Aprostocetus (Aprostocetus) subcylindricus sp. n.

♀. Differs from ♀ of *arenarius* in the characters given in the key to females, couplets 155 and 156, also as follows: head hardly broader than mesoscutum; median carina of propodeum with a triangular anterior fovea which extends only half the length of the carina; forewing with costal cell about 9·5 times as long as broad, *M* 4·2 times length of *ST*.

Body black with only upper angle of mesopleuron, and mouth-edge narrowly, testaceous. All coxae black. Tegulae fuscous posteriorly. Length 2·05 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Velký Vřešťov, 10.vii.1954 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) elegantulus sp. n.

(Fig. 375)

♀. Head (collapsed) at least as broad as mesoscutum. Frons with 2 close, nearly parallel longitudinal lines instead of a single median line. Malar sulcus slightly curved. Antenna (Fig. 375) with scape shorter than eye, hardly reaching median ocellus; pedicellus plus flagellum about 1·3 times breadth of mesoscutum; pedicellus about twice as long as broad, somewhat longer than F1; funicle proximally slightly stouter than pedicellus, hardly thickening distad, its segments decreasing very slightly in length; other features as in the figure. Thorax about 1·6 times as long as broad; propodeal slope 50°. Pronotum short. Mid lobe of mesoscutum slightly broader than long, convex, moderately shiny, with extremely fine engraved reticulation having most areoles 3–4 times as long as broad; median line absent; 3 adnotaular setae on each side, hindmost slightly shorter than scutellar setae. Scutellum 1·3 times as broad as long, strongly convex, sculptured like mesoscutum; submedian lines hardly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length nearly equal to distance between submedian lines, anterior pair hardly behind middle. Dorsellum about twice as broad as long. Propodeum medially as long as dorsellum; median carina thin, with a triangular fovea extending from base to half its length; spiracles small, nearly circular, separated by about half their diameter from metanotum. Legs of medium length; hind coxae oblique, hardly twice as long as broad, hind edge curved; hind femora about 3·5 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere as long as basitarsus. Forewing 2·25 times as long as broad; costal cell shorter than *M*, 12 times as long as broad; *SM* with 3 dorsal setae; *M* thin, 3·5 times length of *ST*, its front edge with 7–8 setae; *ST* nearly straight, very thin proximally but expanding gradually into the small stigma; *PM* rudimentary; speculum small, hardly extending below *M*; wing beyond rather sparsely pilose, though more thickly distad; cilia 0·7 length of *ST*. Hindwing acute; cilia 0·5 breadth of wing. Gaster lanceolate, about 1·6 times as long as head plus thorax, 3·5 times as long as broad, a little narrower than thorax, acuminate; last tergite very slightly longer than broad; longest seta of each cercus twice length of next longest, slightly kinked; ovipositor sheaths projecting somewhat, sheaths plus postcercale 0·4 length of hind tibia; tip of hypopygium slightly before half length of gaster.

Black, non-metallic; face, genae, inner orbits and about basal third of gaster yellow. Antennal scape yellow, pedicellus and flagellum brownish testaceous, pedicellus yellow beneath. Legs including coxae (except proximal part of hind coxae) yellow; pretarsus of all legs fuscous, fourth tarsomere slightly sordid. Tegulae yellowish. Wings hyaline, venation yellow. Length 1·1 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Bouches du Rhône, Fonscolombe, near Puy Ste Réparade, 1.ix.1983 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) escherichi (Szelényi) **comb. n.**

(Figs 377, 378)

Tetrastichus escherichi Szelényi, 1941: 398; Domenichini, 1966*a*: 168; 1966*b*: 30; Kostjukov, 1978*b*: 463; Erdös, 1971: 229. Holotype ♀, HUNGARY: Szatmárnémeti (*Balás*) (TM) [examined].
Geniocerus escherichi (Szelényi) Erdös, 1954: 354.

♀. Head (Fig. 377) about as broad as mesoscutum, 2·0–2·3 times as broad as long; POL 1·2–1·4 OOL, OOL about 1·5 OD. Eyes 1·35 times as long as broad, separated by about 1·2 their length. Malar space fully 0·5 length of eye, sulcus slightly curved and with a small fovea below eye, extending 0·15–0·25 length of gena. Mouth about 1·5 malar space. Antenna (Fig. 378) with scape slightly shorter than eye, reaching to middle or top of median ocellus; pedicellus plus flagellum about 1·2 breadth of mesoscutum; pedicellus 2·3–2·4 times as long as broad, slightly longer than F1; funicle proximally not or hardly stouter than pedicellus, thickening slightly distad, its segments subequal in length, or F1 slightly longer than the others, F1 1·8–2·2 times, F2 1·7–1·8 times, F3 1·35–1·50 times as long as broad; clava slightly broader than F3, a little longer than F2 plus F3, 2·8–3·3 times as long as broad, pointed, with C1 quadrate or slightly transverse, C2 as long as C1, C3 slightly shorter, spine 0·20–0·25 length of C3, with apical seta somewhat longer than spine; sensilla moderately numerous, uniseriate, moderately long, decumbent with slightly projecting tips. Thorax about 1·5 times as long as broad; propodeal slope 50°–60°. Pronotum very short. Mid lobe of mesoscutum as broad as or a little broader than long, moderately convex, shiny, reticulation with most areoles about 3 times as long as broad, except in front where they are shorter; median line fine but distinct; 3–4 rather long and suberect adnotaular setae on each side. Scutellum 1·25–1·40 times as broad as long, only moderately convex, sculptured rather more finely than mesoscutum; submedian lines about equidistant from each other and from sublateral lines, enclosing a space 2·2–2·5 times as long as broad; setae equal, their length equal to or slightly greater than distance between submedian lines, anterior pair slightly to distinctly behind middle. Dorsellum 2·5–2·8 times as broad as long. Propodeum medially slightly shorter than dorsellum, shiny, with fine, weak reticulation; median carina distinct or weak, foveate anteriorly; callus with 3 setae. Legs rather short, somewhat thick; hind coxae only slightly oblique, about 2·5 times as long as broad; hind femora about 4 times as long as broad; spur of mid tibia slightly shorter than basitarsus, fourth tarsomere as long as basitarsus. Forewing 2·20–2·25 times as long as broad; costal cell hardly, or slightly, shorter than *M*, 9·5–10·0 times as long as broad; *SM* with 4–5 dorsal setae; *M* rather thin, 3·4–4·0 times length of *ST*, its front edge with 10–13 setae; *ST* nearly straight, thin proximally but expanding slightly distad, stigma small and subrhomboidal; *PM* a very short stub or rudimentary; speculum small, hardly extending below *M*; wing beyond not thickly pilose; cilia 0·4–0·5 length of *ST*. Hindwing subobtuse; cilia 0·25–0·33 breadth of wing. Gaster lanceolate, 1·3–1·5 times length of head plus thorax, distinctly narrower than thorax, 2·6–4·0 times as long as broad, its sides tending to be nearly parallel in dried specimens owing to distortion, acuminate; last tergite about 1·5 times as long as broad; longest seta of each cercus about 1·5 times length of next longest, slightly kinked; ovipositor sheaths projecting by 0·4 to 0·6 length of last tergite; tip of hypopygium at 0·60–0·66 length of gaster, which is strongly keeled ventrally and in profile much resembles that of *clavicornis* (Fig. 346).

Body yellowish testaceous with at least some dark markings, the latter predominating in dark specimens. The dark parts usually have a faint bluish tinge. Dark females have body black, with fulvous-tan mouth-edge, spots on vertex, sides of pronotum, posterior third of mesoscutum, and dorsellum. In paler forms yellowish colour spreads over face, genae and temples, finally leaving only the ocellar triangle and a transverse mark above foramen magnum black; and over pronotum, leaving only a median spot black; the scapulae become extensively yellow and the same colour appears also on the scutellum which in very pale forms is wholly yellow, on sides of pronotum, prepectus, meso- and metapleuron; in extreme cases sides and venter of thorax are completely yellow except for part of mesosternum. Gaster in dark forms blackish, more often last tergite is more or less yellow and usually there are rather poorly defined yellowish transverse bands on the other tergites; in pale forms gaster is yellow with brownish bands. Antennal scape yellowish, in dark forms slightly infuscate dorsally; pedicellus yellow, sometimes a little infuscate basally; flagellum either testaceous with articulations of funicular segments and sutures of clava brown, or brownish dorsally, or wholly brownish. Legs usually yellow with only pretarsi brown, fourth segment of mid and hind tarsi often brownish, fore tarsi tending to be wholly brownish; in dark forms hind coxae are partly to mainly blackish, whilst mid coxae may be infuscate basally. Tegulae yellow. Wings hyaline, venation yellowish to yellowish testaceous. Length 1·4–2·0 mm.

♂. Unknown.

MATERIAL EXAMINED

11 ♀. **Czechoslovakia**, **Germany**, **Hungary**, **Netherlands**.

HOST. *Oligotrophus* (= *Semudobia*) *betulae* (Winnertz).

Aprostocetus (Aprostocetus) constrictus sp. n.

(Figs 365, 537, 622)

♀. Head not broader than mesoscutum, nearly 2·5 times as broad as long; POL 1·3–1·6 OOL, OOL about twice OD. Eyes 1·4 times as long as broad, separated by 1·3 times their length. Malar space 0·6 length of eye, sulcus virtually straight. Mouth nearly 1·5 malar space. Antenna (Fig. 365) with scape about 0·75 length of eye, reaching to lower edge of median ocellus; pedicellus plus flagellum 1·05–1·25 times breadth of mesoscutum; pedicellus 2·0–2·3 times as long as broad, about as long as F1; funicle proximally slightly stouter than pedicellus, thickening a little distad, F1 1·6–1·9 times, F2 1·3–1·5 times, F3 1·05–1·40 times as long as broad; clava somewhat broader than F3, somewhat longer than F2 plus F3, 2·3–2·8 times as long as broad, spine about 0·3 length of C3, with apical seta about 0·5 length of spine; sensilla rather sparse, uniseriate, moderately long, subdecumbent with projecting tips. Thorax about 1·2 times as long as broad; in profile much like that of *clavicornis* (Fig. 346). Mesosternum short as in *clavicornis*, hind coxae nearly vertical. Pronotum short. Mid lobe of mesoscutum as broad or a little broader than long, moderately convex, shiny, reticulation with most areoles 3–4 times as long as broad; median line very fine and weak, sometimes traceable the whole length of the sclerite, sometimes partly obsolete; 3–4 adnotaular setae on each side. Scutellum 1·25–1·35 times as broad as long, strongly convex, sculptured like mesoscutum; submedian lines somewhat nearer to sublateral lines than to each other, enclosing a space 1·8–1·9 times as long as broad; setae equal, their length about 0·8 distance between submedian lines, anterior pair distinctly behind middle. Dorsellum 3·5–4·0 times as broad as long. Propodeum very broadly and deeply emarginate, medially about half as long as the dorsellum, shiny, sculpture obsolescent; median carina rather vague. Legs of medium length and thickness; hind coxae vertical, nearly 2·5 times as long as broad; hind femora about 4 times as long as broad; spur of mid tibia about 0·75 length of basitarsus; fourth tarsomere shorter than basitarsus. Forewing about 2·2 times as long as broad; costal cell shorter than *M*, 8·5–10·0 times as long as broad; *SM* with 3–4 dorsal setae; *M* not thick, 3·3–3·6 times length of *ST*, its front edge with 11–16 setae; *ST* at about 50°, thin, nearly straight, stigma a mere thickening of the vein; *PM* absent; speculum rather small, wing beyond it moderately thickly pilose; cilia 0·4–0·5 length of *ST*. Hindwing obtuse; cilia 0·18–0·33 breadth of wing. Gaster lanceolate, 1·6–1·8 times length of head plus thorax, nearly or about as broad as thorax, 2·5–3·0 times as long as broad, slightly acuminate; last tergite about as long as, or a little longer than broad; longest seta of each cercus about 1·8 times length of next longest, slightly kinked; ovipositor sheaths projecting by about 0·35 length of last tergite; gaster ventrally deep and protuberant at base between hind coxae; tip of hypopygium at or a little beyond half length of gaster.

Black, non-metallic; tip of pedicellus, and flagellum, brown; trochanters mainly yellowish, tips of femora broadly so; tibiae testaceous, mid pair with a dark postmedian band, hind tibiae black except bases and tips; fore tarsi fuscous, mid and hind tarsi yellowish with tips darker. Wings hyaline, venation testaceous to brownish testaceous. Length 1·5–1·9 mm.

♂. Antenna (Fig. 537) with scape about 0·75 length of eye, just reaching median ocellus, about 2·5 times as long as broad, with ventral plaque 0·3 length of scape; pedicellus plus flagellum 1·75 times breadth of mesoscutum; pedicellus virtually twice as long as broad, equal in length to F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2, about 1·3 times as long as broad, following segments increasing very slightly in length, F2 2·0 times, F3 2·4 times, F4 2·5 times as long as broad; clava not broader than F4, somewhat longer than F3 plus F4, about 5·5 times as long as broad, each of its segments about twice as long as broad; whorled setae long, those of F1 reaching somewhat beyond tip of F3. Genitalia (Fig. 622).

MATERIAL EXAMINED

1 ♂, 13 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 7.ix.1970, swept from foliage of *Betula pubescens* (*Graham*) (BMNH).

Paratypes. **Great Britain**: 3 ♀, same locality as holotype, 7.ix.1970, 1 ♀, 3.ix.1971; 1 ♀, Buckinghamshire, Hell Coppice, near Oakley, 2.viii.1953, 1 ♀, 8.viii.1954 (*Graham*) (BMNH). **Ireland**: 3 ♀, Dublin, Harold's Cross, 14 Clareville Road, 29.viii.1955 (*A. W. Stelfox*) (BMNH). **Netherlands**: 1 ♂, 1 ♀, Wageningen, 7.iv.1971, reared from *Oligotrophus* (= *Semudobia*) sp. in bract-gall on *Betula pontaninii* (*J. C. Roskam*); 1 ♀, Leiden, Hortaj, iii.1971, from *Oligotrophus* sp. on *Betula pubescens* (*Roskam*) (JCR). **Norway**: 1 ♀, Åseral, vii.1977, from *Apion* sp. on *B. pubescens* (*Roskam*) (JCR).

HOSTS. *Oligotrophus* (= *Semudobia*) *tarda* (Roskam) and *O. skuhravae* (Roskam).

The Norway record from *Apion* sp. is difficult to explain.

COMMENTS. *A. constrictus* much resembles *A. escherichi* but has body black, scape black and rest of antenna dark; coxae black, femora mainly so, tibiae more or less infuscate; head more transverse, ratio POL : OOL greater, malar sulcus not foveate; thorax shorter and more convex; submedian lines of scutellum nearer to sublateral lines than to each other, the enclosed space broader; gaster slightly longer relative to head plus thorax, though broader in proportion to its own length, last tergite shorter, ovipositor sheaths less exserted, tip of hypopygium placed less far distad.

Aprostocetus (Aprostocetus) verticalis sp. n.

♀. Head slightly broader than mesoscutum, 2·15 times as broad as long. Malar space 0·55 length of eye. Antenna with scape 0·82 length of eye, reaching to lower edge of median ocellus; pedicellus plus flagellum 1·2 times breadth of mesoscutum; pedicellus 2·1 times as long as broad, hardly longer than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments subequal in length, F1 1·9 times, F2 1·7 times, F3 1·4 times as long as broad; clava slightly longer than F2 plus F3, about 3·5 times as long as broad, pointed, with C1 slightly longer than broad, C2 and C3 progressively shorter, spine 0·3 length of C3, with apical seta nearly as long as spine; sensilla uniseriate, moderately long, with moderately long bases and about equally long projecting blades. Scutellum 1·2 times as broad as long; submedian lines enclosing a space about twice as long as broad; anterior setae about 3 times as far from front edge of scutellum as from posterior setae. Dorsellum twice as broad as long. Propodeum only moderately broadly and deeply emarginate, though medially a little shorter than dorsellum. Hind coxae vertical. Forewing with costal cell 11 times as long as broad. Other features as in *constrictus*.

Body black; upper angle of mesopleuron testaceous, sides of dorsellum obscurely paler. Antennal scape black; pedicellus fuscous proximally, brown apically like the flagellum. Coxae black; legs otherwise testaceous with proximal two-thirds of hind femora fuscous; fourth segment and pretarsus of all legs fuscous. Tegulae testaceous with hind edge fuscous. Wings hyaline, venation yellowish testaceous. Length 1·9 mm.

♂. Unknown.

MATERIAL EXAMINED
1 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 13.vii.1971 (*Graham*) (BMNH).

HOST. Unknown.

COMMENTS. This species closely resembles *constrictus* but differs in its less transverse head, which is a little broader than the mesoscutum; ratio POL : OOL less; antennal clava relatively longer; submedian lines of scutellum enclosing a space about twice as long as broad, anterior setae placed farther back and nearer to posterior setae; dorsellum less broad.

Aprostocetus (Aprostocetus) cerricola (Erdös) **comb. rev.**

(Figs 413, 414, 535, 620)

Geniocerus cerricola Erdös, 1954: 355. LECTOTYPE ♀, HUNGARY: Bákony, 18.x.1951 (*Erdös*) (TM), here designated [examined].
Aprostocetus cerricola (Erdös) Graham, 1961*b*: 59.
Tetrastichus cerricola (Erdös) Domenichini, 1966*a*: 163; 1966*b*: 24; Erdös, 1971: 233–234.

Szelényi loaned to me the whole of the large series which stood as *cerricola* in the Erdös collection. Twenty of the specimens had been taken earlier than 1954 and are therefore syntypes. Most of them belong to *cerricola* as understood here; a ♀ which agrees best with the description is designated lectotype. Szelényi informed me that *cerricola* was his manuscript name, as Erdös (1954: 355) acknowledged, and that the original material on which he had based the name had been lost. He had reared that material from *Arnoldiola cerris* Kollar. In 1954 Erdös diagnosed the species very briefly in a key, without mentioning a host. Later (1971: 233–234) he gave a more detailed description (in Hungarian) and mentioned *Arnoldia cerris* as host. He obtained this information from Szelényi; his own collection contains only swept material. I consulted Szelényi and then selected as lectotype a ♀ which agrees both with his concept of the species and with the description by Erdös.

♀. Head about as broad as mesoscutum, about 2·5 times as broad as long; POL 1·3–1·4 OOL, OOL nearly twice OD. Eyes 1·3–1·4 times as long as broad. Malar space 0·50–0·55 length of eye, sulcus virtually straight. Mouth 1·3–1·4 malar space. Antenna (Fig. 414) with scape distinctly shorter than eye, nearly or just reaching lower edge of median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus slightly more than twice as long as broad, from nearly as long as, to slightly longer than F1; funicle proximally slightly stouter than pedicellus, hardly thickening distad, its segments decreasing slightly in length, F1 1·7–2·5 times, F2 1·5–2·0 times, F3 1·2–1·7 times as long as broad; clava slightly broader than F3, as long as F2 plus F3, 2·5–3·0 times as long as broad, pointed, with C1 about as long as broad, C2 hardly shorter, C3 distinctly shorter, spine 0·25–0·30 length of C3, with apical seta slightly shorter than spine; sensilla moderately numerous, uniseriate, about 0·7 as long as the segments, slender, with long decumbent bases and slightly projecting blades. Thorax 1·25–1·40 times as long as broad; propodeal slope about 60°. Pronotum very short. Mid lobe of mesoscutum about as broad as long, moderately convex, shiny, with excessively fine superficial or lightly engraved reticulation having most areoles 3–4 times as long as broad; median line distinct though sometimes fine; 3–4 (–5) adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, moderately convex, sculptured like mesoscutum but with shorter areoles; submedian lines tending to curve outwards at base, equidistant from each other and from sublateral lines or hardly nearer the latter, enclosed space 1·9–2·5 times as long as broad; setae subequal, their length nearly as great as distance between submedian lines, anterior pair slightly to distinctly behind middle. Dorsellum subpentagonal, 2·0–2·5 times as broad as long. Propodeum medially as long as or a little shorter than dorsellum, shiny, with extremely fine superficial reticulation; median carina slightly raised, expanding in posterior half, with a small triangular basal fovea. Legs of medium length and thickness; hind femora about 3·5 times as long as broad; spur of mid tibia 0·70–0·85 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·15–2·30 times as long as broad; costal cell shorter than *M*, 9–10 times as long as broad; *SM* with 3–5 dorsal setae; *M* thin, 3·4–3·8 times length of *ST*, its front edge with 11–14 setae; *ST* at 45°–50°, slightly curved, very thin proximally but thickened in distal half, stigma small and oblong; *PM* rudimentary; speculum moderate-sized, extending as a narrow wedge some distance below *M*; wing beyond not very thickly pilose, somewhat more thickly distad; cilia 0·25–0·33 length of *ST*. Hindwing obtuse or rounded; cilia 0·20–0·25 breadth of wing. Gaster

(Fig. 413) ovate or long-ovate, as long as or slightly longer than head plus thorax, about as broad as thorax, 1·65–2·30 times as long as broad, acute and very slightly acuminate; last tergite as broad as or slightly broader than long; ovipositor sheaths projecting slightly, to at most 0·4 length of last tergite; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at 0·50–0·55 length of gaster.

Body non-metallic, black with at least the base, or a subbasal band, on the gaster yellow to fulvous, more often about half the gaster pale, in pale forms all but the distal quarter yellow. Antennae yellow to fulvous, tip of clava and sometimes the articulations of the flagellar segments tending to brownish; scape sometimes infuscate proximally, or mainly; pedicellus rarely infuscate proximally. Legs, sometimes including all coxae, yellow, with only pretarsus and fourth tarsomere of all legs brownish; in some females coxae are more or less darkened basally, in dark forms all coxae are black; hind femora sometimes more or less infuscate proximally, in very dark forms all femora with about proximal half black. Tegulae usually fuscous to black, occasionally yellow anteriorly or wholly so. Wings hyaline or faintly yellowish, venation yellow. Length 1·1–1·6 mm.

♂. Antenna (Fig. 535) with scape 0·82–0·85 length of eye, reaching middle of median ocellus, 2·75–2·85 (–3·0) times as long as broad, with ventral plaque 0·28–0·30 length of scape; pedicellus plus flagellum 1·6–1·8 times breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tapering slightly distad; F1 0·5–0·6 length of F2, quadrate; following segments subequal in length, F2 2·0–2·6 times, F3 2·4–2·8 times, F4 2·4–3·0 times as long as broad; clava hardly broader than F4, slightly longer than F3 plus F4, 6–7 times as long as broad, with C1 and C2 twice or somewhat more than twice as long as broad, C3 somewhat shorter; whorled setae long, those of F1 reaching slightly beyond tip of F3. Genitalia (Fig. 620).

Body black; gaster with fairly broad yellow to testaceous subbasal transverse band.

MATERIAL EXAMINED

4 ♂, 36 ♀. **Belgium**, **Czechoslovakia**, **France**, **Greece**, **Hungary**, **Yugoslavia**.

HOSTS. *Macrodiplosis dryobia* (F. Löw); 1 ♀, Belgium: Depanne, 19.viii.1960 (*Gijswijt*) (MJG). Erdös (1971: 234) recorded having taken *cerricola* on leaves of *Quercus cerris* in company with *Arnoldiola* (= *Arnoldia*) *cerris* (Kollar) in Hungary.

Aprostocetus (Aprostocetus) domenichinii (Erdös) **comb. n.**

(Figs 410–412, 456, 619)

Tetrastichus domenichinii Erdös, 1969: 45; 1971: 232–233. Holotype ♀, HUNGARY: Tés, 15.v.1963 (*Erdös*) (TM) [examined].

? *Tetrastichus problematicus* Erdös, 1969: 46–47. Holotype ♀, HUNGARY: Tompa, 25.vi.1962 (*Erdös*) (? lost).

The holotype and paratypes of *domenichinii* in the Erdös collection have been examined.

The holotype of *problematicus* is missing from the Erdös collection. There should be 15 paratypes but only 13 are now present. One of the missing paratypes, a ♀, a Tompa, 30.vii.1962, was given by Erdös to Bouček and is now in the latter's collection. I have not found the remaining paratype, a ♀, Foktö, 18.v.1943. Incidentally, the date of capture of the ♀ paratype from Bükk mountains was recorded by Erdös (1969: 47) as '27.Augusti 1957' but the label on the specimen reads 24.viii.1957. The above paratypes are a very mixed series. A ♀ from Berhida, 4.vi.1953, which agrees particularly well with the description of *problematicus*, is taken, in the absence of the holotype, as an indication of its identity; it is a specimen of *domenichinii* with the gaster rather longer than usual. It bears Erdös' determination label 'Geniocerus ecus Walk' which is significant because Erdös stated (1969: 47) that he had earlier regarded *problematicus* as being *ecus*. Of the remaining paratypes, 1 ♀, Foktö, 21.ix.1943, 1 ♀, Budai, 22.v.1951, and 2 ♀, Erd, 14.vii.1955, appear to belong to *cerricola* (Erdös); 1 ♀, Berhida, 4.vi.1953, 1 ♂, Mátra, 5.viii.1947, 1 ♀, 4.vii.1962, 1 ♂, Tompa, 26.iii.1960, 1 ♀, 21.v.1966, to *domenichinii*; 1 ♂, Mátra, 5.vii.1947, 1 ♂, Berhida, 30.vii.1952, 1 ♂, 1 ♀, Tompa, 25.vi.1952, to *xanthomelas* sp. n.

The specimens representing *problematicus* var. *unicolor* Erdös are also a mixed series, some belonging to *domenichinii*, others to the *pubescens*-group of the genus *Tamarixia* Mercet, and one ♀ (Radnai, 21.vii.1943) is near *Aprostocetus pallipes*.

♀. Head at least slightly less broad than mesoscutum; POL about 1·7 OOL, OOL about 1·6 OD. Eyes nearly 1·3 times as long as broad. Malar space 0·66 length of eye. Mouth about 1·2 malar space. Antenna

(Fig. 410) with scape much shorter than eye, not reaching median ocellus; pedicellus plus flagellum 1·05–1·1 times breadth of mesoscutum; pedicellus 2·4–2·7 times as long as broad, somewhat longer than F1; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments subequal in length, F1 1·7–2·0 times, F2 1·6–2·0 times, F3 1·2–1·9 times as long as broad; clava distinctly broader than F3, as long as or slightly longer than F2 plus F3, 2·0–2·3 times as long as broad, pointed, with C1 and C2 subequal in length, quadrate or slightly transverse, C3 much shorter, spine about 0·25 length of C3, with apical seta as long as spine; sensilla rather numerous, uniseriate, about 0·75 length of segments, slender, decumbent or nearly so. Thorax (Fig. 411) about 1·2 times as long as broad, distinctly broader than high; propodeal slope about 50°. Pronotum very short. Mid lobe of mesoscutum 1·3–1·4 times as broad as long, weakly convex, moderately shiny, reticulation with most areoles about 3 times as long as broad; median line absent or extremely fine and superficial; 3–5 rather short and fine adnotaular setae on each side. Scutellum 1·5–1·8 times as broad as long, moderately convex, sculptured much like mesoscutum; submedian lines subparallel except anteriorly where they curve outwards slightly, distinctly nearer to sublateral lines than to each other, enclosed space 1·3–1·5 times as long as broad; setae subequal, their length about 0·7 distance between submedian lines, anterior pair slightly to distinctly behind middle. Dorsellum lunate, 3·5–4·0 times as broad as long. Propodeum about 4 times as broad as its length at sides, medially as long as or a little shorter than dorsellum, shiny, with fine and delicate superficial reticulation; median carina rather thin, often divided longitudinally by a furrow or subtriangular fovea, expanded posteriorly. Legs rather short and thick; hind coxae strongly oblique; hind femora about 3·5 times as long as broad; spur of mid tibia nearly or just as long as basitarsus, fourth tarsomere much shorter than basitarsus. Forewing 2·00–2·15 times as long as broad; costal cell slightly shorter than *M*, 7·5–9·0 times as long as broad; *SM* with 3–4 dorsal setae; *M* rather thin, 3·0–3·3 times length of *ST*, its front edge with 9–13 setae; *ST* at 45°–50°, very thin proximally but expanding beyond middle, stigma small and subtriangular; *PM* rudimentary or a very short stub; speculum narrow but extending as a wedge below *M* and usually reaching *ST*; wing beyond moderately thickly pilose, thickly distad; cilia about 0·3 length of *ST*. Hindwing obtuse, subobtuse, or slightly pointed; cilia 0·25–0·33 breadth of wing. Gaster (Fig. 412) short-ovate, slightly longer than thorax and sometimes a little longer than head plus thorax, as broad as or slightly broader than thorax, 1·1–1·7 times as long as broad, its apex forming a right or slightly acute angle; last tergite small, nearly or about twice as broad as long; ovipositor sheaths not projecting, or at most very slightly; longest seta of each cercus nearly twice length of next longest, slightly twisted; tip of hypopygium at 0·66 length of gaster.

Nominotypical form non-metallic, black; sutures of face and frons sometimes paler; dorsellum often pale at sides, or wholly; upper angle of mesopleuron, and proximal part of gaster, both dorsally and ventrally (up to half its length) sulphur-yellow. Antennae sulphur-yellow with scape partly to wholly black (most often black dorsally). Coxae black, fore coxae usually more or less yellow distally, sometimes wholly so except base; legs otherwise sulphur-yellow with pretarsi brownish. Tegulae yellow. Basal plate of forewing brownish, wings hyaline or slightly yellowish, venation sulphur-yellow. Front part of mesoscutum occasionally somewhat paler, brownish (? teneral). Length 0·95–1·40 mm.

Form *obscurus* Erdös. Body wholly black (fuscous in tenerals) with at most upper angle of mesopleuron and sometimes the dorsellum, pale. Antennal pedicellus and flagellum slightly darkened dorsally. Tegulae sometimes brownish posteriorly. Connected with nominotypical form by intermediates.

♂. Antenna (Fig. 456) with scape about 3 times as long as broad, with ventral plaque 0·25–0·30 length of scape; pedicellus plus flagellum very slightly greater than breadth of mesoscutum; pedicellus about twice as long as broad, about twice as long as F1; F1 narrower than pedicellus, about half as long as F2, quadrate or slightly longer than broad, following segments twice as broad as pedicellus, subequal in length, each 1·7–2·0 times as long as broad; clava hardly broader than F4, slightly longer than F3 plus F4, nearly 4 times as long as broad, with C1 and C2 subequal in length, each slightly longer than broad, C3 shorter, spine 0·25 length of C3; sensilla sparse; flagellum without whorls of long dark setae. Gaster oval to circular. Genitalia (Fig. 619).

Black; gaster usually with yellow subbasal transverse band, or up to proximal half of gaster yellow. Antennae sulphur-yellow, with ventral plaque and sometimes dorsal edge of scape infuscate. Coxae tending to be paler than in ♀, fore and mid coxae usually wholly yellow, up to distal half of hind coxae yellow.

Form *obscurus* Erdös. Body black with at most upper angle of mesopleuron yellowish, front part of mesoscutum sometimes pale brown; coxae more extensively infuscate than in nominotypical form.

MATERIAL EXAMINED

12 ♂, 33 ♀. **Czechoslovakia**, **France**, **Hungary**.

HOSTS. *Dryomyia circinnans* Giraud, *Arnoldiola cerris* (Kollar). A ♀ in the Giraud collection (MNHN) is labelled as having been reared from *Andricus grossulariae* Giraud on *Quercus cerris*.

COMMENT. The extreme flattening of the thorax seen in the syntypic specimens is an artefact produced by collapse of the integument whilst still soft.

Aprostocetus (Aprostocetus) xanthomelas sp. n.

(Figs 407, 523)

♀. I can distinguish this species from the ♀ of *domenichinii* only by the characters given in the key to females, couplet 179.

Forewing with *M* 3·0–3·2 times length of *ST*. Antenna (Fig. 407).

Body black; proximal half or more of gaster, sometimes the whole gaster, yellowish testaceous. Antennae testaceous to yellowish with scape more or less infuscate, pedicellus sometimes infuscate proximally. Legs yellowish or testaceous; hind coxae in two females fuscous to black, in one ♀ fore and mid coxae are mainly black and femora weakly infuscate proximally. Tegulae usually fuscous, in one ♀ yellow. Wings hyaline, venation pale yellowish. Length 1·10–1·25 mm.

♂ (provisionally associated with ♀). Antenna (Fig. 523) with scape somewhat shorter than eye, 3·0–3·3 times as long as broad, with ventral plaque 0·23–0·30 length of scape; pedicellus plus flagellum 1·5–1·6 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 about half length of F2, quadrate; following segments subequal in length, each 2·0–2·2 times as long as broad; clava slightly broader than F4, somewhat longer than F3 plus F4, 5·0–5·5 times as long as broad, with C1 and C2 each 1·7–2·0 times as long as broad, C3 slightly shorter; whorled setae very long, those of F1 reaching level with tip of F4. Gaster broadly oval.

Black; gaster with testaceous subbasal transverse band which sometimes does not quite reach the lateral margins. Antennal scape and flagellum testaceous or brownish, pedicellus yellow. Legs yellowish with coxae mainly black.

MATERIAL EXAMINED

3 ♂, 4 ♀. Holotype ♀, **France**: Vaucluse, Mont Ventoux, Col de Perrache, 18.vii.1983 (*Graham*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, Obříství nr Mělník, 27.viii.1959 (*A. Hoffer*) (BMNH). **Hungary**: 1 ♀, Berhida, 30.vii.1952 (*Erdös*) (BMNH). **Yugoslavia**: 1 ♀, Istok, 4.vii.1971 (*Mihajlović*) (BMNH).

Non-paratypic material. **Hungary**: 1 ♂, Mátra, 5.viii.1947, 1 ♂, Tompa, 25.vi.1952, 1 ♂, Berhida, 30.vii.1952 (*Erdös*), all paratypes of *problematicus* Erdös (TM).

HOST. Unknown.

Aprostocetus (Aprostocetus) holomelas sp. n.

[*Tetrastichus problematicus* var. *unicolor* Erdös, 1969: 46–47, in part. Misidentification.]

♀. Differs from those of *domenichinii* and *xanthomelas* mainly in the characters given in the key to females, couplet 178. Other differences are as follows. Antenna with pedicellus nearly equal to breadth of mesoscutum; pedicellus twice as long as broad, slightly shorter than F1; F1 about twice, F3 1·8 times as long as broad; clava 2·5 times as long as broad, virtually equal in length to F2 plus F3; sensilla moderately numerous, long and slender, with moderately long bases and about equally long projecting blades. Thorax hardly longer than broad. Mid lobe of mesoscutum with 4 rather long adnotaular setae on each side. Scutellum with submedian lines slightly nearer to sublateral lines than to each other, enclosed space 1·6 times as long as broad; setae equal, their length equal to distance between submedian lines, anterior pair distinctly behind middle. Propodeum medially fully as long as dorsellum; median carina only slightly raised, broadening posteriorly. Forewing barely twice as long as broad; *SM* with 4 dorsal setae. Gaster ovate, somewhat longer than head plus thorax, as broad as thorax, 1·7 times as long as broad, acute though not acuminate; last tergite slightly broader than long.

Body black; upper angle of mesopleuron testaceous. Antennal scape and base of pedicellus black, rest of antenna bright testaceous. Coxae black; legs otherwise testaceous with proximal half of fore femora and proximal two-thirds of mid and hind femora black; hind tibiae broadly infuscate medially, fourth segment of mid and hind tarsi brownish, pretarsi fuscous. Tegulae testaceous. Wings faintly yellowish, venation light testaceous. Length 1·35 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Hungary**: Tompa, Szabadföld, 26.ix.1961, swept from foliage of *Quercus cerris* (*Erdös*) (TM).

HOST. Unknown.

Aprostocetus (Aprostocetus) balasi (Erdös) **comb. rev.**

(Figs 405, 532, 618)

Geniocerus balasi Erdös, 1954: 354. LECTOTYPE ♀, HUNGARY: Berhida, 30.vii.1952 (*Erdös*) (TM), here designated [examined].

Aprostocetus balasi (Erdös) Graham, 1961*b*: 59.

Tetrastichus balasi (Erdös) Domenichini, 1966*a*: 161; 1966*b*: 19; Erdös, 1971: 228.

This species is a similar case to *cerricola*. Szelényi had given the manuscript name *balasi* to some material which he had reared from *Phyllocnistis suffusella* but which had been subsequently destroyed. Erdös (1954: 354) published a brief diagnosis of *balasi* in a key but did not mention host or captor, although he attributed the name to 'Szelényi *in litt*.' However, Erdös had himself swept two females before 1954 and presumably had these before him when drawing up his diagnosis in 1954. They are considered to be syntypes and one of them has been selected as lectotype. Szelényi examined these specimens and told me that he regarded them as conspecific with his earlier material from *Phyllocnistis suffusella*.

♀. Head hardly as broad as mesoscutum (but collapsed in specimens seen); POL probably less than 1·5 OOL, OOL about twice OD. Eyes (distorted) separated by somewhat more than their length. Malar space 0·66 length of eye, sulcus curved. Mouth about 1·3 malar space. Setae of head pale. Antenna (Fig. 405) with scape slightly shorter than eye, probably not quite reaching median ocellus; pedicellus plus flagellum 1·1 times breadth of mesoscutum; pedicellus about 2·2 times as long as broad, from slightly shorter to slightly longer than F1; funicle proximally slightly stouter than pedicellus, hardly thickening distad, its segments subequal or decreasing very slightly in length, F1 1·8–2·5 times, F2 1·8–2·2 times, F3 1·6–1·9 times as long as broad; clava slightly broader than F3, as long as or somewhat longer than F2 plus F3, 2·9–3·6 times as long as broad, pointed, with C1 as long as or hardly longer than broad, C2 hardly shorter, C3 slightly shorter than C2, spine about 0·3 length of C3, with apical seta shorter than spine; sensilla rather sparse, uniseriate, nearly as long as the segments, slender, with long decumbent bases and slightly shorter projecting blades. Thorax at most 1·15 times as long as broad, broader than high; propodeal slope about 45°. Pronotum very short. Mid lobe of mesoscutum distinctly broader than long, rather weakly convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line very fine though distinct; 3–6 adnotaular setae on each side. Scutellum 1·5–1·8 times as broad as long, moderately convex, more finely sculptured than mesoscutum; submedian lines usually slightly nearer to sublateral lines than to each other, occasionally equidistant from both, enclosed space 1·8–2·0 times as long as broad; setae equal, their length as great as or a little greater than distance between submedian lines, anterior pair in or slightly behind middle. Dorsellum 3·5–4·0 times as broad as long. Propodeum strongly transverse, deeply though not broadly emarginate, medially slightly to distinctly shorter than dorsellum, shiny, with fine, very weak reticulation; median carina with a longitudinal channel or fovea at base, hardly or only slightly expanded posteriorly. Legs rather short and rather thick; hind femora 3·3–3·6 times as long as broad; spur of mid tibia 0·60–0·66 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·0–2·25 times as long as broad; costal cell shorter than *M*, 10–11 times as long as broad; *SM* with 3–5 dorsal setae; *M* relatively thin, 3·2–3·8 times length of *ST*, its front edge with 11–15 setae; *ST* at 45°–50°, nearly straight, thin proximally but expanded in distal third to form the small suboval stigma; *PM* rudimentary; speculum small, extending as a narrow wedge a little way below *M*; wing beyond not very thickly pilose; cilia about 0·33 length of *ST*. Hindwing subobtuse or very slightly pointed; cilia 0·2–0·3 breadth of wing. Gaster lanceolate, 1·5–1·8 times length of head plus thorax, slightly narrower than thorax, 2·7–4·0 times as long as broad, acuminate; last tergite hardly to slightly longer than broad; ovipositor sheaths projecting to nearly or quite half length of last tergite; longest seta of each cercus about twice length of next longest, somewhat kinked; tip of hypopygium slightly before half length of gaster.

Body in nominotypical form yellowish to brownish testaceous, with exposed part of ovipositor sheaths black, anterior part of gaster and apex of last tergite sometimes brownish. Antennae yellow with flagellum brown. Legs wholly pale yellowish. Some females from France which appear to be conspecific have gaster infuscate posteriorly, in others the dark colour spreads basad until only the extreme base remains pale; the occipital surface, frons medially, face more or less, sometimes wholly except the mouth-edge, are fuscous; whilst the pronotum partly to wholly, mesoscutum anteriorly or wholly, sometimes scapulae anteriorly and axillae partly, may be fuscous to black. In very dark forms the antennal pedicellus is more or less infuscate dorsally in proximal half, rarely scape is infuscate dorsally. One French ♀ has body black with base of gaster obscurely testaceous, mouth-edge and sides of dorsellum testaceous; hind coxae mainly fuscous. Length 1–2 mm.

♂. Antenna (Fig. 532) with scape slightly shorter than eye had not quite reaching median ocellus, about 3·5 times as long as broad, with ventral plaque about 0·25 length of scape; pedicellus plus flagellum about 1·8 times breadth of mesoscutum; pedicellus slightly more than twice as long as broad, about 1·2 times length of F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad, F1 0·50–0·65 length of F2 and quadrate or slightly longer than broad, following segments subequal or increasing very slightly in length, F2 2·0–2·3 times, F3 2·3–2·5 times, F4 2·70–2·75 times as long as broad; clava a little broader than F4, 5·7–6·0 times as long as broad, with C1 and C2 subequal in length, each about twice as long as broad, C3 shorter; whorled setae long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 618).

Body in nominotypical form as in ♀ but ocellar triangle and occipital surface usually blackish, pronotum often infuscate medially, scutellum posteriorly and propodeum medially infuscate; gaster yellowish with distal half black. Some French males have body brown to fuscous with at most upper angle and a stripe on middle of mesopleuron, dorsellum more or less, mouth-edge, and gaster ventrally (especially in proximal half) testaceous; hind coxae mainly black, fore and mid coxae more or less so; hind femora sometimes infuscate proximally.

MATERIAL EXAMINED

5 ♂, 11 ♀. **Austria**, **France**, **Hungary**, **Italy**.

HOSTS. *Phyllocnistis unipunctella* (Stephens) (=*suffusella* Zeller) and *Pseudargyrotoza conwagana* (F.).

Aprostocetus (Aprostocetus) csokakoensis (Erdös) **comb. n.**

(Figs 406, 531)

Tetrastichus csokakoensis Erdös, 1969: 48; 1971: 239. Holotype ♀, HUNGARY: Csókakö, 22.vi.1962 (*Erdös*) (TM) [examined].

I have examined the 4 ♂ paratypes and 1 ♀ holotype and 6 ♀ paratypes which compose the whole syntypic series in the Erdös collection. They are all conspecific.

♀. Head usually a little less broad than mesoscutum, about 2·3 times as broad as long; temples about 0·25 length of eyes; POL about 1·7 OOL, OOL hardly 1·5 OD. Antenna (Fig. 406) with pedicellus about 2·6 times as long as broad, hardly shorter than F1; funicular segments decreasing gradually in length, F1 2·5–2·7 times, F2 about 2·5 times, F3 about twice, as long as broad. Thorax about 1·2 times as long as broad; propodeal slope 40°. Mid lobe of mesoscutum with most areoles of reticulation 2–3 times as long as broad. Propodeum barely or just as long as dorsellum. Legs of medium length and thickness; fourth tarsomere of mid and hind tarsi much shorter than basitarsus. Gaster about 3 times as long as broad. Other structural features as in *balasi*.

Body black; sutures of frons, sometimes inner orbits narrowly, sometimes mouth-edge, testaceous. Antennal scape and pedicellus blackish, the latter often obscurely testaceous apically; flagellum brown. Coxae black; trochanters mainly to wholly yellow; femora fuscous to black with tips broadly yellow (sometimes distal half of fore and mid femora yellow); tibiae yellow, hind tibiae usually more or less broadly infuscate medially; tarsi yellow with fourth segment and pretarsus brown. Tegulae testaceous, or partly brown. Wings hyaline or faintly yellowish-tinged, venation yellowish to testaceous. Length 2·2–2·4 mm.

♂. Antenna (Fig. 531) with scape about 2·9 times as long as broad, its ventral plaque about 0·3 length of scape; pedicellus plus flagellum about twice breadth of mesoscutum; pedicellus about twice as long as broad, slightly longer than F1; funicle slender, proximally a little stouter than pedicellus but tapering very slightly distad; F1 hardly two-thirds length of F2 and slightly longer than broad, following segments subequal in length, F2 about 2·5 times, F3 about 3 times, F4 about 4 times as long as broad; clava hardly broader than F4, somewhat longer than F3 plus F4, about 7·5 times as long as broad, with C1 fully twice as long as broad, C2 somewhat longer, C3 about as long as C1 and twice as long as broad; whorled setae only moderately long, those of F1 reaching somewhat beyond tip of F2.

Body coloured as in ♀. Antennal pedicellus broadly testaceous apically; flagellum testaceous to brown. Femora sometimes not or hardly infuscate. Length 1·6–1·7 mm.

MATERIAL EXAMINED
4 ♂, 7 ♀. **Hungary**.

HOST. Unknown.

COMMENT. This species is very close to *balasi* but in view of the small differences in structure in both sexes, and its darker coloration, I believe it is distinct.

Aprostocetus (Aprostocetus) citrinus (Förster) **comb. rev.**

(Figs 421, 512, 624, 720)

Eulophus citrinus Förster, 1841: 41. Lectotype ♀, GERMANY (NM), designated by Domenichini (1966*a*: 168) [examined].
Tetrastichus varius Thomson, 1878: 294. LECTOTYPE ♀, SWEDEN: Lund (ZI), here designated [examined]. [Synonymized by Domenichini, 1966*a*: 167.]
Aprostocetus citrinus (Förster) Graham, 1961*b*: 55.
Tetrastichus citrinus (Förster) Domenichini, 1966*a*: 167; 1966*b*: 25.

There are 19 syntypes of *Tetrastichus varius* in Thomson's collection, mounted on 10 pins. The lectotype is the uppermost ♀ of four on the sixth pin, labeled 'Lund'.

♀. Head at most 1·07 times as broad as mesoscutum, about 2·4 times as broad as long; POL 1·5–1·7 OOL, OOL 1·8–2·6 OD. Eyes 1·25 times as long as broad, separated by 1·1 times their length, almost bare. Malar space 0·66–0·77 length of eye, sulcus nearly straight. Mouth about 1·3 malar space. Antenna (Fig. 421) with scape nearly or just as long as eye, reaching middle of median ocellus; pedicellus plus flagellum 1·2–1·3 times breadth of mesoscutum; pedicellus 2·3–2·6 times as long as broad, slightly to very distinctly shorter than F1; anelli (Fig. 720); funicle proximally not or hardly stouter than pedicellus but thickening somewhat distad, its segments decreasing rapidly in length, F1 3·0–3·5 times, F2 2·0–2·3 times, F3 1·5–1·6 times as long as broad; clava distinctly broader than F3, about as long as F2 plus F3, obtuse, with Cl not or hardly longer than broad, C2 and C3 progressively shorter, spine about 0·3 length of C3, with apical seta as long as spine; sensilla moderately numerous on funicular segments, numerous on claval segments, uniseriate, or partly biseriate on F1, moderately long, subdecumbent. Thorax 1·6–1·8 times as long as broad; propodeal slope about 50°. Pronotum very short. Mid lobe of mesoscutum slightly longer than broad, moderately convex, slightly shiny or rather dull, reticulation with most areoles 2–3 times as long as broad; median line very fine and weak, sometimes obsolescent posteriorly; 3–6 adnotaular setae on each side. Scutellum 1·25–1·30 times as broad as long, moderately convex, rather more finely reticulate than mesoscutum and with shorter areoles; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space 1·7–1·9 times as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair slightly behind middle and 1·8–2·0 times as far from front edge of scutellum as from posterior setae. Dorsellum 1·8–2·8 times as broad as long. Propodeum medially about as long as dorsellum; median carina with triangular basal fovea, expanding slightly posteriorly. Legs of medium length and thickness; hind coxae oblique, about 2·5 times as long as broad; hind femora 3·4–3·9 times as long as broad; spur of mid tibia equal in length to basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·25–2·30 times as long as broad; costal cell shorter than *M*, 10·5–14·0 times as long as broad; *SM* with 3–5 dorsal setae; *M* rather thin, 3·8–4·3 times length of *ST*, its front edge with 12–21 setae; *ST* at about 50°, nearly straight, very thin proximally, expanded beyond middle, stigma very small and oblong; *PM* a short stub or rudimentary; speculum moderate-sized, tending to extend a little way below *M*; wing beyond it moderately thickly pilose, thickly distad; cilia 0·3–0·5 length of *ST*. Hindwing obtuse; cilia 0·27–0·30 breadth of wing. Gaster lanceolate, somewhat longer than head plus thorax, about as broad as thorax, 2·4–3·0 times as long as broad, acute and slightly acuminate; last tergite from slightly shorter to slightly longer than broad; ovipositor sheaths projecting slightly; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium slightly before half length of gaster.

Body black with tan, yellow, and sometimes reddish markings, which are usually extensive. Dark northern females have only face, vertex, upper angle of mesopleuron, dorsellum, sides and posterior part of mesoscutum and parts of scapulae and axillae, yellow. Paler forms have yellow colour more extensive on head, mesoscutum and scutellum. In very pale northern and average southern European forms the whole head becomes yellow, also the entire mesoscutum and scutellum (the front part of the former tending to be reddish), whilst yellow or tan markings appear on sides of pronotum, prepectus, propodeum, mesopleuron and sides of gaster; sometimes each segment of the gaster has a medially broken, or entire, tan to yellow transverse band. Antennal scape and pedicellus yellowish, sometimes more or less infuscate dorsally; flagellum brownish testaceous. Legs yellow, the hind coxae sometimes more or less black, occasionally also mid coxae, rarely base of fore coxae; the femora become somewhat reddish in dark forms, very rarely the hind femora are infuscate basally; fourth tarsomere of all legs fuscous, third occasionally brownish. Tegulae yellow. Wings hyaline, venation yellow. Length 2·0–2·7 mm.

♂. Antenna (Fig. 512) with scape fully as long as eye, reaching distinctly above vertex, 3·0–3·5 times as long as broad, with ventral plaque 0·2–0·3 length of scape; pedicellus plus flagellum 2·2–2·4 times breadth of mesoscutum; pedicellus 1·9–2·0 times as long as broad, slightly to very distinctly shorter than F1, the latter somewhat shorter than F2 and 1·9–2·3 times as long as broad, following segments subequal in length, F2 2·65–3·65 times, F3 3·00–3·25 times, F4 3·2–3·4 times as long as broad; clava hardly as broad as F4, somewhat longer than F3 plus F4, 8·3–8·8 times as long as broad, with C1 and C2 more than twice as long as broad, C3 slightly shorter; whorled setae very long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 624).

Body black; gaster almost always with a distinct, sometimes large, testaceous to yellow subbasal spot; usually at least mouth-edge and orbits yellow (dark specimens) but often head and thorax more or less extensively yellow-marked. Antennal scape and pedicellus yellow,usually more or less infuscate dorsally (also ventral plaque of scape), flagellum testaceous to brownish. Legs yellow, usually including fore coxae and sometimes mid coxae partly and hind coxae distally; fourth tarsomere brownish. In dark specimens fore coxae are infuscate basally and very rarely hind femora have a weak brownish streak.

MATERIAL EXAMINED

Many ♂, ♀. **Austria**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Netherlands**, **Sweden**.

HOSTS. *Helicomyia saliciperda* (Dufour) and *Rhabdophaga rosaria* (H. Löw) on *Salix* species.

Aprostocetus (Aprostocetus) tymber (Walker) **comb. rev.**

(Figs 422, 423, 539, 625)

Cirrospilus Tymber Walker, 1839*a*: 298. Lectotype ♀, GREAT BRITAIN (BMNH), designated by Graham (1961*b*: 55) [examined].
Aprostocetus tymber (Walker) Graham, 1961*b*: 55.
Tetrastichus tymber (Walker) Domenichini, 1966*a*: 166.

♀. Differs from that of *citrinus* mainly in the characters given in the key to females, couplet 185. POL 1·3–1·4 OOL; ocelli smaller than in *citrinus*. Antenna (Fig. 422) with scape 0·85–0·95 length of eye; pedicellus plus flagellum 1·1–1·2 times breadth of mesoscutum; pedicellus about 2·2 times as long as broad; funicular segments a little shorter than in *citrinus*, F1 2·2–2·9 times, F2 1·6–2·0 times, F3 1·25–1·55 times as long as broad. Forewing with *M* 3·0–3·9 times length of *ST*. Gaster 2–3 times as long as broad (Fig. 423).

Body usually black with at most mouth-edge and upper angle of mesopleuron testaceous, occasionally also sides of dorsellum (specimens taken in spring and early summer). A few specimens swept from *Salix* in September and October in England have more extensive reddish markings: orbits, sometimes vertex, front corners of mid lobe of mesoscutum, hind edge of scapulae, scutellum partly. In two of these autumnal females the reddish or tan markings are even more extensive on head and thorax. Antennal scape and pedicellus black, scape sometimes pale distally, pedicellus usually pale beneath and at tip; flagellum brown to fuscous. All coxae usually black, rarely fore coxae testaceous distally; all femora usually broadly infuscate proximally, or mainly black, rarely testaceous with base reddish; tibiae sometimes testaceous but often more or less broadly infuscate medially, sometimes mainly black; fore tarsi fuscous, mid and hind tarsi usually testaceous darkening to fuscous at tips, occasionally wholly fuscous. Some of the autumnal females with extensively reddish-marked body have relatively dark legs, others have paler legs. Tegulae usually yellowish with posterior edge brown, rarely pale only in front, or wholly fuscous. Wings subhyaline, venation fuscous to testaceous. Length 1·4–2·5 mm.

♂. Antenna (Fig. 539) with scape about 0·9 length of eye, nearly reaching level of vertex, 2·75–2·90 times as long as broad, with ventral plaque 0·35–0·41 length of scape; pedicellus plus flagellum 1·7–1·9 times breadth of mesoscutum; pedicellus 1·60–1·75 times as long as broad, approximately equal in length to F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad; F1 much shorter than F2, 1·3–1·6 times as long as broad, following segments subequal in length, F2 2·0–2·6 times, F3 2·70–2·85 times, F4 2·4–2·9 times as long as broad; clava not broader than F4, slightly longer than F3 plus F4, 6·1–6·9 times as long as broad, with C1 and C2 subequal in length, each at least twice as long as broad, C3 slightly shorter though longer than broad; whorled setae very long, those of F1 reaching level with tip of F3. Genitalia (Fig. 625).

Colour of body, antennae and legs as in darker ♀; gaster black. Tegulae tending to be darker, sometimes wholly fuscous.

MATERIAL EXAMINED

Many ♂, ♀. **Great Britain**, **Ireland**, **Netherlands**. Records from other countries are probably erroneous.

HOST. *Helicomyia saliciperda* (Dufour) on *Salix* spp.: ♂, ♀, Netherlands, Wageningen, reared 13.iii.1968 (*W. C. Nijveldt*) (ITZ).

COMMENTS. In Britain adults of *tymber* appear from the end of April until the endof July. Specimens taken in September and October appear to represent a second brood. I have swept specimens from *Salix alba*, *S. fragilis* and *S. atrocinerea*.

The species recorded as *tymber* by Domenichini (1966*b*: 52; 1967: 94), reared from *Lasioptera rubi*, was misidentified and is referable to *rubi* (see p. 319).

Aproctocetus (Aprostocetus) obliquus sp. n.

(Figs 420, 626)

♀. Differs from that of *citrinus* as follows. Antenna (Fig. 420) with clava slightly asymmetircal with its sutures rather oblique; gaster on average shorter, 1·8–2·3 times as long as broad; POL only 1·1–1·2 OOL.

Head with malar space 0·72–0·78 length of eye. Antenna with scape virtually as long as eye, reaching level of vertex; pedicellus 2·25–2·40 times as long as broad, about 0·6 length of F1; clava with C1 slightly transverse, spine about 0·3 length of C3 with apical seta as long as spine. Forewing with *M* 3·7–4·0 times length of *ST*.

Body black, richly marked with yellow and tan. Head yellow with occipital surface mainly black; ocellar triangle, genae and face sometimes more or less black-marked. Thorax in a dark ♀ black with posterior edge of pronotum, prepectus, scapulae, sides and posterior half of mid lobe of mesoscutum, axillae partly, sides of scutellum, and dorsellum, yellow. Paler ♀ have pronotum except its front part, whole of mesoscutum, axillae and scutellum yellow with darker sutures, and with a reddish suffusion on axillae and front part of mesoscutum; mesopleuron and propodeum also more or less tan-marked. In dark forms the gaster is yellowish only at base but in paler ♀ it has a transverse yellowish band (broken medially) on each tergite except the last. Hind coxae mainly black, mid coxae black or mainly yellow, fore coxae varying from mainly black to wholly yellow; trochanters yellow; femora yellow apically, fore femora otherwise brownish, mid femora brown to black in proximal half, hind femora fuscous to black in proximal two-thirds; fore tibiae testaceous, mid tibiae brown to fuscous with bases and tips yellow, hind tibiae brown to black with bases narrowly and tips more broadly yellowish; tarsi yellow with fourth segment blackish, third and even the second occasionally brown. Tegulae yellow. Wings hyaline or faintly yellowish, venation testaceous to brown, *ST* tending to be a little darker. Length 2·1–2·3 mm.

♂. Lateral ocelli larger than in ♀, OOL at most 1·4 OD, the latter a little greater than breadth of pedicellus. Differs from ♂ of *citrinus* in having hind legs, especially femora and tibiae, slightly stouter, antennal scape reaching only slightly above vertex, pedicellus plus flagellum about twice breadth of mesoscutum, clava 7·0–7·5 times as long as broad. Genitalia (Fig. 626).

Colour as in dark ♀ but prepectus and dorsellum mainly to wholly black,the other pale areas of thorax rather less extensive; gaster black with at most a poorly defined subbasal testaceous spot. Fore and mid femora and tibiae yellow, or at most very slightly infuscate; hind femora yellow, brownish proximally, or mainly black.

MATERIAL EXAMINED

4 ♂, 4 ♀. Holotype ♀, **Great Britain**: Middlesex, Southgate, 30.ix.1971, swept from foliage of *Salix fragilis* (*Graham*) (BMNH).

Paratypes. Same locality as holotype 1 ♂, 3.ix.1969, 1 ♂, 11.viii.1971, 2 ♀, 10.ix.1971, 1 ♀, 20.ix.1971, 2 ♂, 5.x.1971, all from foliage of *Salix fragilis* (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) metra (Walker) **comb. rev.**

(Figs 428, 629)

Cirrospilus Metra Walker, 1838: 201. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 56) [examined].
Tetrastichus metra (Walker) Walker, 1848: 146; Domenichini, 1966*a*: 167, 1966*b*: 39.
Aprostocetus metra (Walker) Graham, 1961*b*: 56.

♀. Head slightly less broad than mesoscutum, about twice as broad as long; POL 1·25–1·40 OOL, OOL 1·5–2·0 OD, the latter hardly greater than breadth of pedicellus. Head in front view about 1·1 times as broad as high when undistorted but often appearing no broader than high owing to lateral shrinkage. Eyes 1·25 times as long as broad, separated by 1·2 times their length, almost bare. Malar space about 0·6 length of eye, sulcus straight. Mouth 1·3 malar space. Antenna (Fig. 428) with scape about 0·85 length of eye, reaching about to level of vertex; pedicellus plus flagellum 1·15–1·24 times breadth of mesoscutum; pedicellus 2·2–2·8 times as long as broad, usually at least a little shorter than F1, about equal to it in a small ♀; funicle only slightly stouter than pedicellus, filiform or nearly so; F1 2·25–3·50 times, F2 1·7–2·2 times, F3 1·6–1·8 times as long as broad; clava a little broader than funicle, as long as or slightly longer than F2 plus F3, rather acutely pointed, with C1 as long as or slightly longer than broad, spine about 0·4 length of C3, with apical seta more than half length of spine; sensilla moderately numerous, uniseriate, long, most with long decumbent base and somewhat shorter blade. Thorax about 1·5 times as long as broad; propodeal slope about 60°. Pronotum short. Mid lobe of mesoscutum as broad as or a little broader than long, moderately convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line fine, sometimes traceable throughout, sometimes only in posterior half; 3–5 adnotaular setae on each side. Scutellum 1·4–1·5 times as broad as long, rather strongly convex, sculptured like mesoscutum; submedian lines parallel for most of their length but curving outwards slightly at front end, somewhat nearer to sublateral lines than to each other, enclosing a space 1·8–2·0 times as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair well behind middle. Dorsellum 2·3–2·8 times as broad as long. Propodeum similar to that of *citrinus*. Legs somewhat thick; hind femora about 3·6 times as long as broad; spur of mid tibia about as long as basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing about 2·2 times as long as broad; costal cell shorter than *M*, 10–14 times as long as broad; *SM* with 3–4 dorsal seate; *M* rather thin, 3·9–4·2 times length of *ST*, its front edge with 11–16 setae; *ST* at about 45°, very thin, stigma small and longer than high; *PM* rudimentary; speculum rather narrow, not extending below *M*; wing beyond it moderately thickly pilose; cilia 0·25–0·28 length of *ST*. Hindwing obtuse; cilia 0·20–0·33 breadth of wing. Gaster lanceolate, 1·25–1·40 times length of head plus thorax, about as broad as thorax, (1·6–) 2·3–2·8 times as long as broad, acuminate; last tergite as long as or very slightly longer than broad; ovipositor sheaths projecting very slightly; longest seta of each cercus nearly twice length of next longest, kinked; tip of hypopygium at about 0·5 length of gaster.

Body non-metallic, black with yellow and tan markings (but wholly black forms might be expected in northern areas). Darkest form with only mouth-edge, upper angle of mesopleuron and dorsellum yellowish; sometimes a tan spot on each side of vertex next to eye. Paler forms have orbits, lower half of head, a spot at each anterior angle of mid lobe of mesoscutum, scapulae more or less, sides of scutellum, and prepectus, tan. In the palest form (e.g., lectotype) head is yellowish tan except the occipital surface, whilst other tan areas are the pronotum excepting its neck, mesoscutum except an anterior spot, scutellum except submedian lines, sides of metanotum, prepectus and mesopleuron mainly. Coxae in darkest form black with tips pale, hind femora infuscate medially. Palest form has legs wholly yellow except bases of hind coxae and fourth tarsomere. Dark forms have antennal scape fuscous, pedicellus fuscous with tip pale; paler forms have scape tan with dorsal edge infuscate, pedicellus tan with base dark; flagellum pale to dark brown. Tegulae yellow. Wings hyaline, venation testaceous or yellowish. Length 1·7–2·4 mm.

♂. Lateral ocelli slightly larger than in ♀, OOL about 1·4 times OD. Antennal scape slightly shorter than eye, barely reaching vertex, 2·8–3·1 times as long as broad, with ventral plaque about 0·35 length of scape; pedicellus plus flagellum 2·1–2·2 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tapering very slightly distad; F1 distinctly to much shorter than F2, 1·2–1·6 times as long as broad, following segments subequal in length, each 2–3 times as long as broad; clava distinctly longer than F3 plus F4, 7·0–7·5 times as long as broad, with C1 and C2 subequal in length, each 2·0–2·6 times as long as broad; whorled setae very long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 629).

Body black; upper angle of mesopleuron testaceous. Antennal scape fuscous; pedicellus testaceous, more or less infuscate proximally; flagellum brown. Coxae black; all femora blackish basally, hind femora sometimes mainly so.

MATERIAL EXAMINED

4 ♂, 23 ♀. **Great Britain, Netherlands, Sweden.**

HOSTS. *Rhabdophaga clavifex* (Kieffer), *R.* sp., and *Helicomyia pulvini* (Kieffer). Rearing data are as follows. Netherlands: 1 ♀, Bakkum, 16.iv.1972, 1 ♀, 26.iv.1972, from *Rhabdophaga clavifex* on *Salix repens* (*W. C. Nijveldt*) (ITZ). Sweden: 1 ♂, 1 ♀, Halland, Enslöv, 8.vi.1954, from *R. clavifex*, 1 ♀, 26.vi.1954, from *R.* sp., 1 ♀, 20.vi.1954, from *Helicomyia pulvini*, all on *Salix aurita* (*H. Andersson*).

On 5.ix. and 8.ix.1960 I swept 2 ♂, 19 ♀ from foliage of *Salix repens* (England: Lancashire, Freshfield).

Aprostocetus (Aprostocetus) rubicola sp. n.

(Figs 353, 354)

♀. Differs from ♀ of *metra* in having head in front view slightly broader than high; antenna (Fig. 353) with scape nearly or quite 4 times as long as broad; pedicellus plus flagellum about 1·5 times breadth of mesoscutum; pedicellus 2·5–2·6 times as long as broad, very distinctly shorter than F1; funicular segments more elongate, F1 2·7–3·8 times, F2 2·6–3·2 times, F3 2·5–2·8 times as long as broad; clava hardly broader than F3, slightly shorter than F2 plus F3, 4·7–5·3 times as long as broad, with a slight constriction between C1 and C2, which are subequal in length, each nearly or quite twice as long as broad; sensilla biseriate on each funicular segment; reticulation of propodeum slightly raised; spur of mid tibia only about 0·66 length of basitarsus; forewing longer, 2·4–2·5 times as long as broad; costal cell 15–19 times as long as broad; *M* 3·3–3·5 times length of *ST*; gaster (Fig. 354) about twice as long as head plus thorax, 3·8–4·2 times as long as broad, strongly acuminate, with last tergite 1·8–2·8 times as long as broad, ovipositor sheaths projecting by about 0·33 length of last tergite and appearing nearly or quite parallel-sided.

Body non-metallic, black, with mouth-edge narrowly and upper angle of mesopleuron testaceous. Antennal scape yellowish testaceous, pedicellus brown with tip sometimes paler, anelli testaceous, flagellum brown. Legs yellowish testaceous with proximal third to half of hind coxae blackish, fore and mid coxae in one ♀ slightly infuscate basally, pretarsus of all legs brownish. Tegulae testaceous. Wings hyaline, venation testaceous. Length 1·9–2·6 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **West Germany**: Hannover Münden, Kattenbühl, reared v.1961 from *Lasioptera rubi* Heeger (*E. Priesner*) (BMNH).

Paratype. **West Germany**: 1 ♀, Hannover Münden, Gahrenberg, same date and host as holotype (*E. Priesner*) (BMNH).

HOST. *Lasioptera rubi* Heeger.

COMMENT. Though apparently closely related to *metra* and *rubi*, *rubicola* may be distinguished from them and all other black species of the *lycidas*-group by its long and slender antennal flagellum and a particularly long and slender clava which has a slight constriction between C1 and C2; the gaster is also longer and more acuminate than in related species.

Aprostocetus (Aprostocetus) abydenus (Walker) comb. rev.

(Figs 434, 533, 628, 682)

Cirrospilus Abydenus Walker, 1848: 236. Lecotype ♂, GREAT BRITAIN: England (BMNH), designated by Graham (1961*b*: 56) [examined].

Aprostocetus abydenus (Walker) Graham, 1961*b*: 55–56.
Tetrastichus abydenus (Walker) Domenichini, 1966*a*: 161; 1966*b*: 16, in part (excluding synonym).

In an earlier paper (Graham, 1961*b*: 56) I stated that I could see no appreciable difference between the male of *abydenus* (the only sex described) and that of *femoralis* although I did not synonymize the two. Domenichini, however, synonymized *femoralis* with *abydenus* (1966*a*: 161). Later I was able to recognize with certainty the female of *abydenus*, which is noticeably different from that of *femoralis*. The synonymy proposed by Domenichini is therefore incorrect.

♀. Head as broad as, or very slightly less broad than, mesoscutum; POL 1·3–1·5 OOL, OOL nearly or just twice OD, the latter equal to or very slightly greater than breadth of pedicellus. Eyes 1·3–1·4 times as long as broad, separated by 1·15–1·20 times their length. Malar space 0·5–0·6 length of eye, sulcus nearly straight. Mouth slightly greater than malar space. Antenna (Fig. 434) with scape 0·75–0·83 length of eye, 3·0–3·7 times as long as broad; pedicellus plus flagellum 1·10–1·15 times breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, usually somewhat shorter than F1, occasionally nearly as long; funicle proximally slightly stouter than pedicellus, thickening slightly distad, its segments decreasing in length, F1 2·2–2·7 times, F2 1·6–1·9 times, F3 1·3–1·5 times as long as broad; clava slightly broader than F3, about as long as F2 plus F3, 2·2–2·6 times as long as broad, slightly pointed, with C1 about as long as broad, spine about 0·35 length of C3, apical seta about 0·33 length of spine; sensilla sparse on funicle, more numerous on clava, relatively long, uniseriate. Thorax 1·4–1·5 times as long as broad; propodeal slope 60°. Mid lobe of mesoscutum about as broad as long, sculptured as in *metra*; median line extremely fine and superficial, usually traceable throughout, rarely indistinct; 3–6 adnotaular setae on each side. Scutellum 1·25–1·30 times as broad as long; submedian lines straight, or very slightly curved outwards anteriorly; anterior pair of setae slightly to far behind middle; othewise as in *metra*. Dorsellum and propodeum as in *citrinus*. Legs as in *metra* but spur of mid tibia 0·90–0·97 length of basitarsus. Forewing 2·15–2·18 times as long as broad; costal cell 9·5–10·0 times as long as broad; *SM* with 3–5 dorsal setae; *M* 3·3–4·4 times length of *ST*, its front edge with (12–) 15–20 setae; *ST* at about 40°, thin proximally, expanding gradually to form a rather indistinct stigma; other features as in *metra*. Gaster long-ovate to sublanceolate, 1·1–1·5 times as long as head plus thorax, as broad as or slightly broader than thorax, 1·8–2·3 times as long as broad, acute and slightly acuminate (but less so than in *metra*); last tergite slightly broader than long, or as long as broad; ovipositor sheaths projecting even less than in *metra*. Hypopygium (Fig. 682).

Colour as in *metra* and with a similar range of variation. Forms with body wholly black occur in the north of Europe. In extensively pale-marked forms the pale colour is a rich tan, without any tendency to develop yellow areas such as occur in *citrinus* and some other species. In dark forms the legs may be even darker than in the darkest forms of *metra*: the mid femora, and even the fore femora, may be partly infuscate or mainly black; rarely the hind tibiae are infuscate medially. There is a degree of correlation between the colour of the body and that of the legs but it is not complete; some females with body almost wholly black have relatively pale legs.

♂. Antenna (Fig. 533) with scape 0·75 length of eye, just reaching vertex, 3·0–3·7 times as long as broad, with ventral plaque 0·34–0·40 length of scape; pedicellus plus flagellum 1·90–1·95 times breadth of mesoscutum; pedicellus 1·7–1·8 times as long as broad, as long as or a little longer than F1; F1 shorter than F2 and about 1·5 times as long as broad, following segments subequal in length, each about 3 times as long as broad; clava 6–7 times as long as broad; otherwise much as in *metra*. Genitalia (Fig. 628).

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Netherlands**, **Norway**, **Sweden**.

HOSTS. *Rhabdophaga heterobia* (F. Löw), *R. marginemtorquens* (Bremi), *R. rosaria* (H. Löw) and *R. terminalis* (H. Löw) on various species of *Salix*. I have examined many specimens reared in the Netherlands by Vlug and Gijswijt, from *R. heterobia* on *Salix triandra*, from *R. terminalis* on *Salix alba*, a number from *R. marginemtorquens* on *S. viminalis* and one ♀ from *R. rosaria* on *S. repens*. From galls of *R. rosaria* taken at Narvik, Norway, by S. Novitzky, I reared 3 ♀ with black bodies and exceptionally dark legs; these appear to be melanistic *abydenus*. I have swept many specimens of the nominotypical form from foliage of *Salix fragilis* in southern Britain (including Southgate, which is probably the type-locality of *abydenus*).

COMMENT. Host records and other biological data attributed to *abydenus* by Domenichini (1966*a*: 161; 1966*b*: 16) do not apply to that species but to *femoralis*.

Aprostocetus (Aprostocetus) femoralis (Sundby) **comb. n.**

(Figs 435, 534, 627)

Tetrastichus femoralis Sundby, 1957: 47. LECTOTYPE ♀, NORWAY: Trøndelag, 20.vii.1956 (*Sundby*) (Sundby coll.), here designated [examined].

[*Tetrastichus abydenus* (Walker); Domenichini, 1966*a*: 161; 1966*b*: 16, in part. Misidentification.]

When describing *femoralis*, Sundby stated 'Type: in the author's collection' but did not indicate its sex or locality of origin. She kindly lent me a male and a female when I requested the loan of the type. The female specimen bears a pink ticket and was presumably intended as type. In order to remove any doubt and clarify the situation I here designate this female lectotype.

Domenchini evidently considered, from the remark in his synonymy of *abydenus* (1966*a*: 161), that the name *femoralis* Sundby was preoccupied by '*Geniocerus femoralis* Erdös' (1954: 359). However, Erdös did not there propose a new name; in his key to species he referred merely to '*Geniocerus femoralis* Kurdj. (1913)'. No such name was published by Kurdjumov and it is clear that '*Geniocerus femoralis* Kurdjumov' was a *lapsus* on the part of Erdös for *Geniocerus tibialis* Kurdjumov, 1913. Later (1971: 249) Erdös validated a species which he named '*Tetrastichus femoralis* Erd.' by a Hungarian description in his key to the Hungarian species of *Tetrastichus*. *Tetrastichus femoralis* Erdös, 1971 is a synonym (**syn. n.**) of *Eutetrastichus endemus* (Walker) (**comb. n.**) and is also preoccupied by *femoralis* Sundby, 1957.

♀. Head slightly collapsed but would probably be slightly narrower than mesoscutum if undistorted. POL : OOL : OD ratio probably similar to that of *abydenus*. Eyes 1·3 times as long as broad. Malar space about 0·65 length of eye, sulcus nearly straight. Mouth about 1·5 malar space. Antenna (Fig. 435) with scape about 0·85 length of eye, just reaching median ocellus; pedicellus plus flagellum about 1·1 times breadth of mesoscutum; pedicellus about as long as F1, 2·15 times as long as broad; funicle proximally not stouter than pedicellus but thickening slightly distad, its segments subequal in length, F1 2·1 times, F2 2·2 times, F3 1·6 times as long as broad; clava slightly broader than F3, about equal in length to F2 plus F3, 2·8–2·9 times as long as broad, rather pointed, with C1 hardly longer than broad, C2 and C3 progressively shorter, spine about 0·6 length of C3, apical seta fully 0·66 length of spine; sensilla moderately numerous, uniseriate, about three-quarters as long as the segments, with moderately long sessile bases and rather long outstanding blades. Thorax about 1·4 times as long as broad; propodeal slope 45°–50°. Mid lobe of mesoscutum about as long as broad, sculptured as in *abydenus*; median line distinct; 3 adnotaular setae on each side. Scutellum nearly 1·5 times as broad as long, moderately convex; distance between submedian lines about 1·5 times the distance between them and sublateral lines; submedian lines curving outwards very slightly at front ends, then running parallel, enclosed space 1·6–1·7 times as long as broad; setae equal, anterior pair about 3 times as far from front edge of scutellum as from posterior setae. Dorsellum about 2·5 times as broad as long. Propodeum medially about as long as dorsellum; median carina distinct, with a triangular fovea at base. Legs of medium length; hind coxae oblique, about twice as long as broad; hind femora nearly 4 times as long as broad; spur of mid tibia 0·8 length of basitarsus, fourth segment of mid and hind tarsi slightly shorter than basitarsus. Forewing about 2·25 times as long as broad; costal cell 14 times as long as broad, shorter than *M*; *SM* with 3–4 dorsal setae; *M* rather thin, about 3·5 length of *ST*, its front edge with 13–14 setae; *PM* a short stub; *ST* at about 45°, extremely thin, the stigma merely a very slight thickening of the vein; speculum rather small, extending as a narrow wedge some way below *M*; wing beyond it only moderately thickly pilose though somewhat more thickly distad; cilia about 0·4 length of *ST*. Hindwing obtuse; cilia 0·25 breadth of wing. Gaster lanceolate, virtually twice as long as thorax, narrower than thorax, 3·00–4·25 times as long as broad, slightly acuminate; last tergite about 1·3 times as long as broad; longest seta of each cercus twice length of next longest, kinked; ovipositor sheaths projecting by a length equal to one-third of last tergite; tip of hypopygium somewhat before half length of gaster.

Body black; mouth-edge, upper angle of mesopleuron, and dorsellum laterally, testaceous. Antennae fuscous; pedicellus yellowish beneath and apically. Legs yellow; proximal half of fore coxa, base or most of mid coxae, hind coxae mainly, black; hind femora with broad black band, mid femora infuscate proximally; fourth segment of all tarsi brownish. Tegulae yellow. Wings hyaline, venation yellowish. Length 1·5–1·8 mm.

♂. Antenna (Fig. 534) with scape distinctly shorter than eye, reaching median ocellus, about 3 times as long as broad, with ventral plaque 0·29 length of scape; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus slightly longer than F1, about 1·8 times as long as broad; funicle proximally somewhat stouter than pedicellus, tapering slightly distad; F1 much shorter than F2, quadrate or slightly longer than broad; F2 to F4 subequal in length, each about 2·5 times as long as broad; clava slightly broader than F4, about 6·3 times as long as broad, with C1 and C2 subequal in length, each fully twice as long as broad, C3 somewhat shorter; whorled setae very long, those of F1 reaching beyond tip of F3. Genitalia (Fig. 627).

Colour as in ♀ but antenna with scape and pedicellus testaceous; ventral plaque of scape, and flagellum, brownish. Gaster with yellowish subbasal spot.

MATERIAL EXAMINED

1 ♂, 2 ♀. **Norway**: 1 ♀ (lectotype), Trøndelag, 20.vii.1956 (*Sundby*); 1 ♂, same data. Many other specimens (not seen) were reared by Sundby from localities in Norway. **Great Britain**: 1 ♀, Middlesex, Southgate, 26.x.1964 (*Graham*) (BMNH).

HOSTS. *Phyllocnistis labyrinthella* Bjerkander, *Lyonetia clerckella* (L.) and *Rhynchaenus populi* (F.) (Sundby, 1957).

COMMENT. According to Sundby's tables 15, 16a, 16b and 17 (1957) males formed 64 per cent of the total emergence of *femoralis* in Norway, an unusually high ratio in *Aprostocetus*.

Aprostocetus (Aprostocetus) rubi sp. n.

(Fig. 433)

[*Tetrastichus tymber* Walker; Domenichini, 1966*b*: 52; 1967: 94; Bouček, 1977: 119. Misidentifications.]

♀. Head in front view subtrapeziform, distinctly broader than high. Malar space about 0·65 length of eye. Antenna (Fig. 433) with scape approximately 0·8 length of eye, reaching middle of median ocellus; pedicellus plus flagellum 1·15–1·35 breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, usually somewhat shorter than but occasionally as long as F1; funicle proximally slightly stouter than pedicellus, filiform or thickening a little distad, its segments decreasing very slightly in length, F1 2·0–2·4 times, F2 about twice, F3 1·6–2·0 times as long as broad; clava slightly broader than F3, about as long as F2 plus F3, 3·2–3.7 times as long as broad, rather pointed, with C1 quadrate or slightly longer than broad, C2 hardly shorter, spine about 0·35 length of C3, with apical seta about 0·7 length of spine; sensilla moderately numerous. Thorax 1·40–1·45 times as long as broad. Mid lobe of mesoscutum slightly broader than long, or as long as broad; median line very fine or obsolescent; 3–5 adnotaular setae on each side. Spur of mid tibia 0·80–0·87 length of basitarsus. Forewing with costal cell 9·5–12·0 times as long as broad; *SM* with (3–) 4–5 dorsal setae; *M* 3–4 times length of *ST*, its front edge with 10–15 setae; cilia 0·29–0·50 length of *ST*. Gaster lanceolate, variable in proportions, (2·3–) 2·5–3·4 (–4·0) times as long as broad, 1·6–1·8 times as long as thorax, slightly narrower or nearly as broad as thorax, slightly to rather distinctly acuminate; last tergite 1·0–1·4 times as long as broad; ovipositor sheaths projecting by 0·2–0·5 length of last tergite. Other structural features as in *femoralis*.

Body black; upper angle of mesopleuron, sides or (usually) whole of dorsellum, sometimes mouth-edge, testaceous; in pale forms occasionally the pleural sclerites of the thorax are more or less pale-marked. Antennae fuscous; tip of pedicellus, and the flagellum, sometimes slightly paler. Legs yellowish to testaceous with coxae black in dark forms, but usually fore coxae partly to wholly, mid coxae partly to mainly, hind coxae apically, pale; hind femora usually partly infuscate, or broadly black, mid femora often dark-banded, occasionally also fore femora; fourth segment of all tarsi brownish. Tegulae testaceous, sometimes brownish posteriorly. Wings hyaline, venation yellowish to testaceous. Length 1·8–2·5 mm.

♂. Unknown.

MATERIAL EXAMINED

13 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Praha-Šárka, iii.1955, reared from *Lasioptera rubi* (*P. Starý*) (BMNH).

Paratypes. **Czechoslovakia**: 2 ♀, same data as holotype; 3 ♀, Bohemia, Kladno, v.1958, from *Lasioptera rubi* (*Zuska*) (BMNH). **Finland**: 1 ♀, EH, Vanaja, 1952, from same host (*E. Valkeila*) (BMNH). **France**: 2 ♀, Dordogne, St Cybranet, 28.viii.1974, from same host (*Graham*) (BMNH). **Sweden**: 2 ♀, Halland, Enslöv, 22.iv.1956, from same host (*H. Andersson*) (ZI). **West Germany**: 1 ♀, near Hannover Münden, Kattenbühl, v.1961, from same host (*E. Priesner*) (BMNH).
Yugoslavia: 1 ♀, Zemun, 1965, from same host (*Dobrivojavič*) (BMNH).

HOST. *Lasioptera rubi* Heeger in stem-galls of *Rubus* spp.

COMMENTS. *A. rubi* is very close to *femoralis* but differs in having a slightly stouter antennal funicle, slightly longer clava, and weaker median line on mid lobe of mesoscutum. It also has a different host.

Aprostocetus (Aprostocetus) tiliaceae sp. n.

♀. Antenna with clava about 3·2 times as long as broad; pedicellus plus flagellum about 1·2 times breadth of mesoscutum. Spur of mid tibia 0·85 length of basitarsus. Forewing with *M* 3·4–3·5 times length of *ST*. Gaster distinctly longer than head plus thorax, 2·5–3·0 times as long as broad; last tergite about as long as broad.

Body black; mouth-edge and clypeus, upper angle of mesopleuron and dorsellum, testaceous. Antennal scape and pedicellus fuscous, pedicellus pale beneath and apically; flagellum fuscous. Legs testaceous with proximal third of fore coxae, and about proximal half of mid and hind coxae, blackish; fourth segment of all tarsi brown, pretarsi fuscous. Tegulae testaceous. Wings hyaline, venation yellowish. Length 1·70–1·85 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Czechoslovakia**: unlocalized, reared from *Didymomyia reamuriana* on *Tilia* (*M. Skuhravá*) (BMNH).

HOST. *Didymomyia tiliacea* (Bremi) (=*reamuriana* F. Löw).

COMMENT. This species is extremely close to *rubi* and differs only in colour and host (see couplet 200 of key to females).

Aprostocetus (Aprostocetus) tilicola sp. n.

♀. Differs from that of *femoralis* only in the characters given in the key to species, couplet 198.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Great Britain**: Surrey, Headley Heath, reared 10.vii.1947 from *Contarinia tiliarum* (Kieffer) on *Tilia europaea* (*M. N. Niblett*) (BMNH).

HOST. *Contarinia tiliarum* (Kieffer).

Aprostocetus (Aprostocetus) epilobiellus sp. n.

(Fig. 437)

♀. Appears to differ from dark forms of *abydenus* only in having a relatively longer antennal clava (Fig. 437) and a different host.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Netherlands**: Leersum, 12.viii.1971, reared from gall of *Dasineura epilobii* (F. Löw) on *Chamaenerion angustifolium* (*H. J. Vlug*) (ITZ).

Paratypes. **Netherlands**: 2 ♀, 's Graveland, vii.1960, reared from same host (*Gijswijt*) (MJG).

HOST. *Dasineura epilobii* (F. Löw).

Aprostocetus (Aprostocetus) aquilus sp. n.

♀. Differs from dark forms of *abydenus* in having *M* on average longer; gaster on average shorter, 1·40–2·25 times as long as broad; antennal clava slightly longer, 2·6–3·1 times as long as broad, its spine about 0·5 length of C3.

Body black; mouth-edge sometimes very narrowly testaceous, sides of dorsellum sometimes obscurely so. Antennal scape and pedicellus black, the latter usually pale at tip and occasionally beneath, flagellum brownish testaceous to fuscous. Coxae black; trochanters infuscate proximally; femora black with tips pale; tibiae occasionally testaceous but most often the hind tibiae are broadly infuscate medially or mainly black, mid tibiae sometimes with fuscous postmedian ring; fore tarsi fuscous, fourth segment of mid and hind tarsi fuscous, third brownish, second sometimes slightly sordid; other parts of legs testaceous. Tegulae black. Wings subhyaline, venation fuscous to testaceous. Length 1·5–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

10 ♀. Holotype ♀, **Great Britain**: Middlesex, Southgate, 14.v.1971, reared from a bag containing heads of *Trifolium pratense* (*Graham*) (BMNH).

Paratypes. **Great Britain**: 3 ♀, Middlesex, Southgate, 16.viii.1966, 5 ♀, 19.viii.1966 (*Graham*) (BMNH). **West Germany**: 1 ♀, Weissenseifen, reared 31.v.1965 from *Dasineura trifolii* (F. Löw) (*H. J. Vlug*) (ITZ).

HOST. *Dasineura trifolii* (F. Löw).

Aprostocetus (Aprostocetus) perone sp. n.

(Figs 430, 432)

♀. Antenna (Fig. 430) with scape reaching level of middle or top of median ocellus; pedicellus very slightly shorter than or just as long as F1; funicular segments decreasing slightly in length, F1 2·3–2·4 times, F2 1·8–2·0 times, F3 1·6–1·7 times as long as broad; clava 2·9–3·0 times as long as broad, pointed, spine 0·50–0·66 length of C3; other features as in *abydenus*. Thoracic structure, legs and wings as in *abydenus*. Gaster slightly longer than head plus thorax, 1·9–2·3 times as long as broad, acute but hardly acuminate. Forewing (Fig. 432).

Body black. Antennal scape and pedicellus black, flagellum fuscous to black. Coxae black; femora black with tips testaceous (fore and mid femora more broadly, hind femora narrowly; tibiae testaceous, hind tibiae except in one specimen with fuscous postmedian ring, in Norwegian specimens broadly to mainly black, mid tibiae usually with fuscous postmedian ring; fore tarsi fuscous, mid and hind tarsi testaceous proximally but darkening gradually to fuscous at tips. Tegulae black or (in British ♀) brown anteriorly. Wings hyaline, venation testaceous to brown. Length 1·6–2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

7 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 24.vi.1966 (*Graham*) (BMNH).

Paratypes. **Great Britain**: 1 ♀, Middlesex, Southgate, 4.vii.1968 (*Graham*) (BMNH). **Norway**: 1 ♀, Jostedalen, Vigdalen, 11.viii.1979, 4 ♀, Jostedalen, Gaupne, 16.vii.1979 (*S. Compton*) (HUE).

HOST. Unknown.

COMMENTS. *A. perone* is close to *acron* but differs in the characters given in the key to females, couplet 195. It differs from the ♀ of *abydenus* in having antennal scape reaching middle or top of median ocellus, and in its relatively longer antennal clava and longer terminal spine; the funicular segments decrease more gradually in length and F1 is on average rather shorter.

Aprostocetus (Aprostocetus) acron sp. n.

♀. Resembles that of *perone* but differs in its relatively longer, more acute and acuminate gaster, somewhat longer flagellum, shorter claval spine, and slightly broader head (see key to females, couplet 195). Differs from ♀ of *rubi* in having scape reaching somewhat above vertex, clava not quite as long as F2 plus F3.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Velký Vřešťov, 7.vii.1954 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) mimulus sp. n.

(Fig. 425)

♀. Head about as broad as mesoscutum (slightly collapsed), apparently similar in structure to that of *abydenus*. Malar space about 0·6 length of eye, sulcus nearly straight. Antenna (Fig. 425) with scape 0·85 length of eye; pedicellus plus flagellum 1·15–1·17 times breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, about as long as or hardly longer than F1; funicle proximally hardly stouter than pedicellus, thickening a little distad, F1 and F2 subequal in length, F3 slightly shorter, F1 2·0–2·2 times, F2 1·8–2·0 times, F3 1·3–1·6 times as long as broad; clava slightly broader than F3, as long as F2 plus F3, 2·5–2·6 times as long as broad, pointed, its segments decreasing in length, each about as long as broad, spine about 0·4 length of C3, with apical seta slightly shorter than spine; sensilla uniseriate, very slender, about 0·75 as long as the segments, with moderately long decumbent bases and long projecting blades. Thorax 1·35–1·45 times as long as broad; propodeal slope about 60°. Pronotum very short. Mid lobe of mesoscutum about as long as broad, shiny, reticulation with most areoles 2–3 times as long as broad; median line distinct; 3–4 adnotaular setae on each side. Scutellum 1·35–1·50 times as broad as long, moderately convex, sculptured like mesoscutum but with shorter areoles; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length almost as great as distance between submedian lines, anterior pair hardly, or slightly, behind middle. Dorsellum 2·2–2·5 times as broad as long, hind edge curved. Propodeum medially as long as or hardly shorter than dorsellum; median carina moderately strong, with indistinct basal fovea, slightly expanded posteriorly. Legs rather short; hind femora 3·6–4·0 times as long as broad; spur of mid tibia 0·80–0·85 length of basitarsus, fourth segment slightly shorter than basitarsus. Forewing 2·20–2·35 times as long as broad; costal cell slightly shorter than *M*, 13–14 times as long as broad; *SM* with 3–4 dorsal setae; *M* thin, 3·2–4·0 times length of *ST*, its front edge with 10–12 setae; *ST* at about 47°, nearly straight, very thin proximally and hardly expanded distally, stigma only a slight thickening of the vein, but with a rather long uncus; *PM* rudimentary; speculum small, extending as a very narrow wedge about half way along *M*; wing beyond it moderately thickly pilose; cilia 0·38–0·60 length of *ST*. Hindwing slightly pointed or subacute; cilia about 0·33 breadth of wing. Gaster ovate, as long as or hardly longer than head plus thorax, about as broad as thorax, 1·8–2·2 times as long as broad, acute but not acuminate; last tergite slightly broader than long; ovipositor sheaths projecting very slightly; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium at 0·5 length of gaster.

Black, with testaceous markings on head and thorax. Dorsellum wholly yellow. Testaceous parts are: face, genae and temples more or less, gular area; upper angle of mesopleuron, prepectus, prosternum, usually scapulae more or less, often lateral spots on pronotum. Antennae fuscous; scape more or less testaceous at base and beneath. Legs testaceous with hind coxae mainly to wholly blackish, mid coxae often dark proximally, sometimes also fore coxae; hind femora broadly brownish medially, sometimes also mid femora, occasionally fore femora; fore tarsi brownish, mid and hind tarsi brownish at tips. Tegulae testaceous with hind edge brown. Wings subhyaline, venation testaceous. Length 1·2–1·4 mm.

♂. Unknown.

MATERIAL EXAMINED

4 ♀. Holotype ♀, **Greece**: Peloponnisos, Petalidion, 27.viii.1979 (*Bouček*) (BMNH).

Paratypes. **Greece**: 1 ♀, Peloponnisos, Petalidion, 27.viii.1979, 2 ♀, 28.viii.1979 (*Bouček*) (BMNH).

HOST. Unknown.

COMMENT. *A. mimulus* resembles pale forms of *abydenus* from which it may be distinguished by the position of the anterior setae of the scutellum, its rather more slender flagellum and rather shorter first segment of the funicle.

Aprostocetus (Aprostocetus) azoricus sp. n.

(Fig. 426)

♀. Differs from ♀ of *mimulus* mainly in the structural characters noted in the key to females, couplet 188. Antenna (Fig. 426) with pedicellus 1·95–2·15 times as long as broad, approximately equal in length to F1; F1 1·9–2·3 times, F2 1·9–2·2 times, F3 1·50–1·75 times as long as broad; clava 2·9–3·2 times as long as broad with C1 slightly longer than broad.

Colour as in paler specimens of *mimulus*; face wholly, frons mainly, testaceous; gaster with a subbasal transverse yellowish bar. Legs with at most hind coxae partly dark; femora yellow, or at most hind femora brownish in proximal half.

♂. Unknown.

MATERIAL EXAMINED

6 ♀. Holotype ♀, **Azores**: Flores, Santa Cruz, 22 or 23.ix.1979 (*A. van Harten*) (ITZ).
Paratypes. **Azores**: 1 ♀, same data as holotype; 4 ♀, 26. or 27.ix.1979 (*A. van Harten*) (ITZ).

HOST. Unknown.

Aprostocetus (Aprostocetus) alveatus Graham **comb. rev.**

(Figs 351, 352)

Aprostocetus alveatus Graham, 1961*a*: 28–29. Holotype ♀, SWEDEN: Dalarne (*Boheman*) (ZI) [examined].
Tetrastichus alveatus (Graham) Askew & Ruse, 1974: 159–160.

♀. A full description was given by Graham (1961*a*) and it is only necessary to add a few details. The antennal scape, in specimens with undistorted head, reaches the level of the vertex. The propodeal callus has 2–3 setae. Antenna (Fig. 351). Forewing (Fig. 352).

As regards colour, Askew & Ruse obtained specimens which are paler than the nominotypical form and have the whole face below the antennal toruli yellow and the legs yellow except the bases of the hind coxae. The palest specimens were those reared in the laboratory (therefore at a higher temperature than in the field). Such pale examples would perhaps not occur in Britain under natural conditions, although it suggests that similarly coloured forms could be expected in southern Europe, if the species occurs there.

♂. Unknown. Askew & Ruse (1974: 160) remarked that the species is apparently thelytokous.

MATERIAL EXAMINED

102 ♀. **Great Britain, Norway, Sweden**.

HOST. *Massalonghia rubra* (Kieffer) on leaves of *Betula* spp. (Askew & Ruse, 1974). An account of the biology of *alveatus* is given in this paper; the larvae are ectoparasitic on the host larvae.

COMMENTS. This species is clearly related to *lycidas* and its close allies. It differs from them mainly in its foveate malar sulcus and slight metallic tinge of the body. From *lycidas* it also differs in its more slender form and slightly longer spur of mid tibia (about 0·75 length of basitarsus).

The species referred to as *alveatus* by Domenichini (1966*b*: 17) was misidentified (see *eurytomae* (Nees)); his records of *alveatus* from Czechoslovakia and Morocco are erroneous.

Aprostocetus (Aprostocetus) rufescens **sp. n.**

(Fig. 436)

♀. Differs from ♀ of *abydenus* in the characters given in the key to females, couplet 203. Antenna (Fig. 436) with scape about 0·85 length of eye, reaching middle of ocellus or even a little above this; pedicellus plus flagellum 1·15–1·30 times breadth of mesoscutum; pedicellus 2·0–2·3 times as long as broad, very slightly shorter than F1; funicle proximally slightly stouter than pedicellus, hardly thickening distad, its segments decreasing very slightly in length, F1 2·0–2·4 times, F2 1·9–2·0 times, F3 1·4–1·7 times as long as broad; clava slightly broader than F3, 2·65–3·50 times as long as broad, with spine about 0·5 length of C3; sensilla moderately numerous, uniseriate. Mid lobe of mesoscutum with 4–5 adnotaular setae on each side. Spur of mid tibia 0·75–0·80 length of basitarsus. Hindwing subobtuse or slightly pointed.

Body reddish yellow with black markings, or black with reddish yellow markings. The darkest form is black with the following parts pale: mouth-edge, upper angle of mesopleuron, prepectus mainly, sides of dorsellum, hinder half of scapulae. In other females the pale colour spreads over the face, upper part of frons, vertex, sides of pronotum and a spot on each side of the median line, mesoscutum mainly to wholly, propodeum medially or mainly, mesopleuron more or less, basal tergite of gaster. Palest females with head entirely reddish yellow except ocellar triangle and a transverse band on occipital surface at level of foramen magnum, thorax wholly except a spot band on occipital surface at level of foramen magnum, thorax wholly except a spot on each side of pronotum, markings at bases of wing-attachments, and propodeal carina; basal tergite of gaster reddish yellow, following tergites each with a transverse band of the same colour, ventral surface of gaster extensively pale. Legs in darkest females with all coxae mainly black, all femora blackish over proximal 0·5 to 0·7, fourth segment of all tarsi brownish, pretarsi fuscous. Paler forms have fore and mid coxae pale, hind coxae more or less so, all femora pale. The palest females have legs entirely reddish yellow except tips of tarsi. Antennal scape varying from blackish with ventral part pale, to reddish yellow with dorsal edge more or less darkened; pedicellus fuscous, often paler beneath and at apex, flagellum fuscous or brown, tending to be paler beneath. Length 1·35–2·10 mm.

♂. Unknown.

MATERIAL EXAMINED

8 ♀. Holotype ♀, **France**: Bouches du Rhône, Fonscolombe, reared 16.vi.1982 from a bag containing galls of *Neuroterus quercusbaccarum* (L.) (*Graham*) (BMNH).

Paratypes. **France**: 1 ♀, Bouches du Rhône, near Rognes, 27.vi.1977; 2 ♀, Fonscolombe, 12.vi.1982; 1 ♀, Vaucluse, Mont Ventoux, 11.viii.1976, 1 ♀, 2.viii.1983; 1 ♀, Cantal, oakwood on bank of Rhue, near Essards, 7.viii.1973 (*Graham*) (BMNH). Great Britain: 1 ♀, Hampshire, New Forest, 10.viii.1975 (*Bouček*) (BMNH).

HOST. Probably *Neuroterus quercusbaccarum* (L.).

Aprostocetus (Aprostocetus) perfulvescens sp. n.

(Fig. 427)

♀. Differs from ♀ of *rufescens* chiefly in its squatter thorax which is only 1·2–1·3 times as long as broad, with mid lobe of mesoscutum 1·20–1·35 times as broad as long, and its more extensively pale body. Head with OOL 1·9–2·1 OD. Antenna (Fig. 427) with pedicellus as long as or slightly longer than F1; clava 2·5–2·8 times as long as broad. Hindwing obtuse. Gaster on average slightly shorter than in *rufescens*, 1·4–2·1 times as long as broad (1·80–2·15 times in *rufescens*).

Body mainly yellowish testaceous with the following parts fuscous to black: usually a spot in ocellar triangle, a spot or transverse bar on occipital surface above foramen magnum, a dot above each pronotal spiracle, the hind edge of the propodeum above the petiole, a spot on each side of anterior edge of propodeum between median carina and spiracle, projecting part of ovipositor sheaths, last tergite more or less; gaster dorsally with a brownish transverse band on each tergite, sometimes rather indefinite. Legs testaceous with fourth tarsomere brown to fuscous. Wings hyaline or faintly yellowish, venation yellowish testaceous. Antennal scape testaceous, sometimes slightly darker on distal part of dorsal edge; pedicellus testaceous, usually darker proximally; flagellum brownish. Length 1·15–1·65 mm.

♂. Unknown.

MATERIAL EXAMINED

7 ♀. Holotype ♀, **Greece**: Lésvos, Krátigos, 10 km SSE. of Mitilini, 25.xi.1973 (*A. C. & W. N. Ellis*) (ITZ).

Paratypes. **Greece**: 4 ♀, same data as holotype; 1 ♀, Lésvos, 10 km SE. of Kalloni, bed of river Krionéri, 10.xi.1973, 1 ♀, 12 km SSW. of Ayia Paraskevi, bed of river Milopótamos, 11.xi.1973 (*A. C. & W. N. Ellis*) (ITZ).

Aprostocetus (Aprostocetus) leptoneuros (Ratzeburg) **comb. rev.**

(Figs 439–441)

Eulophus leptoneuros Ratzeburg, 1844*b*: 169. LECTOTYPE ♀, GERMANY (NM), here designated [examined].

Entedon leptoneurus (Ratzeburg) Ratzeburg, 1848: 170 [invalid emendation].

Aprostocetus leptoneuros (Ratzeburg) Graham, 1961*b*: 59, in part.

? *Tetrastichus leptoneurus* (Ratzeburg) Domenichini, 1966*a*: 168; 1966*b*: 37.

Earlier (Graham, 1961*b*: 59) I mentioned some specimens which Domenichini had found and which he thought to be original material of *leptoneuros*; I examined them about that time. Now I am certain that these specimens are not syntypes. In NM, however, there is a Ratzeburg ♀ which agrees with his description and which I here designate lectotype. It is gummed to a card-point and bears 4 labels: (1) Ented-on leptoneuros [a word here undecipherable]; (2) Collectio Ratzeburg; (3) leptoneurus R. det. Ratzeburg; (4) lepto-neur. R. Label (1) is probably an original one, the others later additions.

As the species has not been redescribed (*Geniocerus leptoneurus* Ratzeburg as described and figured by Sugonjaev (1962: 176) appears to be different) I give a redescription of the lectotype below.

♀. Head hardly as broad as mesoscutum, about 2·5 times as broad as long; temples 0·25 length of eyes; POL 1·45 OOL, OOL twice OD. Eyes 1·3 times as long as broad, separated by slightly more than their length. Malar space 0·55 length of eye, sulcus straight, with minute fovea below eye. Mouth about 1·3 malar space. Vertex sparsely clothed with setae whose length is slightly less than OD. Antenna (Fig. 439) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus 2·2 times as long as broad, slightly longer than F1; funicle proximally just as stout as pedicellus, thickening very slightly distad, its segments decreasing very slightly in length, F1 nearly twice, F2 1·8 times, F3 1·4 times as long as broad; clava slightly broader than F4, 2·5 times as long as broad, pointed, with C1 about as long as broad, C2 hardly shorter but very slightly transverse, C3 much shorter, spine 0·25 length of C3, with apical seta as long as spine; sensilla moderately numerous, uniseriate, slender, decumbent. Thorax 1·3 times as long as broad; propodeal slope 50°. Pronotum short. Mid lobe of mesoscutum 1·2 times as broad as long, moderately convex, moderately shiny, reticulation with most areoles 4 times as long as broad; median line fine but distinct throughout; 4 adnotaular setae on each side. Scutellum 1·4 times as broad as long, moderately convex, sculptured like mesoscutum though in median area the areoles of anterior part are shorter; submedian lines converging slightly caudad, somewhat nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair well behind middle and nearly 3 times as far from front edge of scutellum as from posterior setae. Dorsellum about 3 times as broad as long, hind edge obtusely angulate. Propodeum medially hardly shorter than dorsellum, shiny, with moderately fine, delicately engraved reticulation; median carina rather thin, with small tringular basal fovea, expanding only slightly at caudal end. Legs of medium length and thickness; hind femora 4 times as long as broad; spur of mid tibia apparently only a little shorter than basitarsus, fourth tarsomere distinctly shorter than basitarsus. Forewing (Fig. 440) 2·1 times as long as broad; costal cell shorter than *M*, 10·5 times as long as broad; *SM* with 3–4 dorsal setae; *M* rather thin, 3·5 times length of *ST*, its front edge with 13 setae: *ST* at about 45°, nearly straight, thin but expanding very slightly distad, stigma small and oval with a rather long uncus which is directed obliquely towards costal edge of wing; *PM* rudimentary; speculum moderate-sized, extending as a narrow wedge some distance below *M*; wing beyond it not very thickly clothed with rather long setae, with a nearly bare area above *ST*; cilia 0·25 length of *ST*. Hindwing obtuse; cilia 0·25 breadth of wing. Gaster (Fig. 441) oblong-lanceolate, 1·4 times length of head plus thorax, as broad as thorax, other details as figured; tip of hypopygium at 0·5 length of gaster.

Brownish black (slightly faded), non-metallic; mouth-edge narrowly testaceous, scapular flanges and sides of dorsellum subtestaceous. Antennae fuscous with pedicellus testaceous beneath and broadly so at apex. Legs yellowish testaceous with coxae black, basal half of fore and mid femora and basal two-thirds of hind femora brown, fourth tarsomere fuscous. Tegulae blackish. Wings hyaline, venation testaceous. Length 1·65 mm.

♂. Unknown to me. Ratzeburg reared some males but they appear to be lost.

MATERIAL EXAMINED

1 ♀ (lectotype). **Germany**.

HOST. *Kermes quercus* (L.) according to Ratzeburg (1844*b*).

COMMENTS. The ♀ of *leptoneuros* is extremely close to that of *trjapitzini* (for differences see the latter).

The ♀ described as *leptoneurus* [sic] by Sungonjaev (1962: 176) appears to be different from the lectotype of *leptoneuros*. His figure 21 of the ♀ gaster shows it as somewhat shorter than that of the lectotype, whilst his figure 18 of the ♀ antenna shows it with a stout filiform flagellum like that of *pachyneuros*. As Domenichini (1966*a*; 1966*b*) evidently followed Sugonjaev's interpretation, his records of *leptoneuros* from Spain and U.S.S.R. need to be re-examined. It is desirable to obtain further material which fits the lectotype, and if possible males, so that the characters of *leptoneuros* can be properly assessed.

Aprostocetus (Aprostocetus) trjapitzini (Kostjukov) **comb. n.**

(Figs 438, 631)

Tetrastichus trjapitzini Kostjukov, 1976: 169–171; 1978*b*: 465. Holotype ♀, U.S.S.R.: Irkutsk region (ZIL) [not examined].

♀. Head with POL 1·25–1·30 OOL. Malar space about 0·66 length of eye. Antenna (Fig. 438) with pedicellus plus flagellum 1·1–1·2 times breadth of mesoscutum; pedicellus slightly shorter than or as long as F1; F1 2·0–2·3 times as long as broad and distinctly longer than F2, the latter 1·7–1·8 times, F3 1·4–1·6 times as long as broad; clava as long as or slightly longer than F2 plus F3, 2·5–2·8 times as long as broad, with spine 0·4 length of C3, apical seta about 0·6 length of spine. Thorax 1·35–1·45 times as long as broad. Forewing with *M* 3·1–3·7 times length of *ST*, its front edge with 11–19 setae; stigma with a moderately long uncus which is nearly parallel to costal edge of wing. Gaster 1·3–1·6 times length of head plus thorax, 2·3–3·0 times as long as broad, with sides more curved than in *leptoneuros*. Other structural characters as in *leptoneuros*.

Black; mouth-edge, upper angle of mesopleuron and sometimes dorsellum brown or testaceous. Antennae with tips of scape and of pedicellus brown; flagellum fuscous. Legs black with trochanters partly to wholly testaceous; tibiae at bases and tips, or wholly, testaceous; bases of tarsi testaceous. Tegulae testaceous, or fuscous posteriorly. Wings subhyaline, venation testaceous to brown. Length 1·3–2·0 mm.

♂. Head very slightly broader than mesoscutum. Antenna with scape slightly shorter than eye, just reaching lower edge of median ocellus, 2·5–2·7 times as long as broad, with ventral plaque 0·33 length of scape; pedicellus plus flagellum nearly twice breadth of mesoscutum; pedicellus nearly twice as long as broad, about as long as or slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tapering very slightly distad; F1 shorter than F2 and hardly 1·5 times as long as broad, following segments subequal in length, each about 2·5 times as long as broad; clava about 6 times as long as broad, distinctly longer than F3 plus F4, with C1 and C2 subequal in length, each about twice as long as broad, C3 slightly shorter; whorled setae very long, those of F1 reaching slightly beyond tip of F3. Genitalia (Fig. 631).

Colour as ♀, but ventral plica of gaster sometimes with a translucent brown subbasal spot.

MATERIAL EXAMINED

2 ♂, 30 ♀. **Great Britain**, **Sweden**, **U.S.S.R.**

HOSTS. *Physokermes piceae* (Schrank), *P. sugonjaevi* Danzig, *Parthenolecanium corni* (Bouché), *Eulecanium rugulosum* (Archangelskaya), *E. secretum* Borchsenius and undetermined *Eulecanium* species; in Great Britain only *Physokermes piceae* on *Picea abies*.

Aprostocetus (Aprostocetus) agevilleae **sp. n.**

[*Tetrastichus novatus* Walker; Domenichini, 1966*b*: 41. Misidentification.]

♀. Differs from that of *trjapitzini* in having pedicellus plus flagellum approximately equal to breadth of mesoscutum; clava 2·50–2·65 times as long as broad, as long as or slightly shorter than F2 plus F3; thorax 1·2–1·3 times as long as broad.

Mouth-edge, dorsellum, and sometimes posterior part of scapulae, testaceous or reddish testaceous. Legs testaceous with hind coxae mainly, mid coxae more or less, fore coxae sometimes basally, blackish; hind femora broadly brown to fuscous medially, mid femora sometimes brownish medially. Tegulae testaceous, sometimes brown posteriorly. Length 1·5–1·9 mm.

♂. Unknown.

MATERIAL EXAMINED

5 ♀. Holotype ♀, **Czechoslovakia**: Slovakia, Banská Štiavnica, ii.1963, reared from *Agevillea abietis* Hubault (*M. Čapek*) (BMNH).

Paratypes. **Czechoslovakia**: 3 ♀, same data as holotype; 1 ♀, Teplý Potok, 23.iv.1955, from same host on *Abies alba* (= *pectinata*) (*M. Čapek*) (BMNH).

HOST. *Agevillea abietis* Hubault.

COMMENT. Some of the above specimens appear slightly teneral and the paler areas of the body may be due to this. Although *agevilleae* is extremely close to *trjapitzini*, the small distinctions noted above, and particularly the different host, lead me to regard it as a valid species.

Aprostocetus (Aprostocetus) incrassatus Graham **comb. rev.**

(Figs 389–391, 536, 635)

Aprostocetus incrassatus Graham, 1961*a*: 32–33. Holotype ♀, GREAT BRITAIN: England, Oxfordshire, Otmoor, 14.viii.1955 (UM) [examined].
Tetrastichus incrassatus (Graham) Domenichini, 1966*a*: 173; 1966*b*: 36; Kostjukov, 1978*b*: 465.

♀. For full description see Graham (1961*a*). This, with the characters noted in the key to females, should allow this sex to be recognized. Antenna, forewing, gaster (Figs 389–391).

♂ (new). Antenna (Fig. 536) with scape 0·85 length of eye, reaching level of vertex, nearly 3 times as long as broad, with ventral plaque 0·3 length of scape; pedicellus plus flagellum 1·9 times breadth of mesoscutum; pedicellus twice as long as broad, about equal in length to F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 somewhat shorter than F2, 1·5–1·6 times as long as broad, following segments subequal in length, proportions as shown in the figure; clava about 6 times as long as broad, about as long as F3 plus F4; whorled setae only moderately long, those of F1 hardly reaching tip of F3. Thorax 1·5 times as long as broad. Mid lobe of mesoscutum with fine median line. Scutellum moderately strongly convex. Hind femora about 3·7 times as long as broad. Gaster as in *aethiops*. Genitalia (Fig. 635).
Colour as in ♀; gaster black.

MATERIAL EXAMINED
6 ♂, 13 ♀. **Great Britain**.

HOST Unknown. All the specimens were swept from *Carex* sp.

Aprostocetus (Aprostocetus) humilis Graham **comb. rev.**

(Figs 380–382, 507, 634)

Aprostocetus humilis Graham, 1961*a*: 30–32. Holotype ♀, GREAT BRITAIN: Scotland, Mid Perth, Kenmore, 2.vii.1953 (*Graham*) (UM) [examined].
Tetrastichus humilis (Graham) Domenichini, 1966*a*: 170; 1966*b*: 35.

♀. A full description of the ♀ has already been given (Graham, 1961*a*).

♂ (new). Antenna (Fig. 507) with scape virtually as long as an eye, reaching distinctly above vertex, about 2·7 times as long as broad, with ventral plaque 0·3 length of scape; pedicellus plus flagellum 2·15 times breadth of mesoscutum; pedicellus about as long as F1, 2·3 times as long as broad; funicle proximally very slightly stouter than pedicellus, tapering very slightly distad; F1 slightly shorter than F2, 2·2 times as long as broad, following segments increasing a little in length, F2 3·0 times, F3 3·5 times, F4 3·5 times as long as broad; clava 7·5 times as long as broad with C1 and C2 equal in length, each about 2·5 times as long as broad, C3 shorter and twice as long as broad; whorled setae not very long, those of F1 reaching slightly beyond tip of F2. Thoracic characters as in ♀. Genitalia (Fig. 634).

MATERIAL EXAMINED
1 ♂, 11 ♀. **France** (Forêt de Fontainebleau), **Great Britain**.

HOST. Unknown.

Aprostocetus (Aprostocetus) lycidas (Walker) **comb. rev.**

(Figs 424, 540, 630, 721)

Cirrospilus Lycidas Walker, 1839*a*: 295. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 56) [examined].
Aprostocetus lycidas (Walker) Graham, 1961*b*: 56.

Tetrastichus lycidas (Walker) Domenichini, 1966*a*: 167; 1966*b*: 38.

♀. Head hardly or only just as broad as mesoscutun, 2·3–2·4 times as broad as long; POL 1·4–1·6 OOL, OOL 1·5–1·8 OD. Eyes 1·35 times as long as broad, separated by about 1·2 times their length. Malar space 0·60–0·63 length of eye. Mouth 1·4 times malar space. Antenna (Fig. 424) with scape 0·88–0·95 length of eye, 3·8–4·5 times as long as broad, reaching vertex; pedicellus plus flagellum in large ♀ slightly greater than breadth of mesoscutum, in smallest up to 1·25 times; pedicellus 2·0–2·5 times as long as broad, usually distinctly shorter than F1, in very small ♀ just as long; anelli (Fig. 721); funicle slender but slightly stouter than pedicellus, filiform, its segments decreasing slightly in length, F1 (2·0–) 2·3–3·0 times, F2 1·8–2·5 times, F3 1·7–2·0 times as long as broad; clava slightly broader than F3, virtually as long as F2 plus F3, 3·00–3·35 times as long as broad, pointed, with C1 usually a little longer than broad, spine about 0·35 length of C3, apical seta slightly shorter than spine; sensilla moderately numerous, uniseriate or partly biseriate on F1 and F2, slender, 0·66–0·75 as long as the segments, with long decumbent bases and long projecting blades. Thorax nearly 1·5 times as long as broad; propodeal slope 60°. Pronotum short. Mid lobe of mesoscutum as long as or very slightly longer than broad, moderately convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line more or less indicated but very fine; 2–7 adnotaular setae on each side. Scutellum 1·20–1·27 times as broad as long, moderately strongly convex, with sculpture rather finer than that of mesoscutum; submedian lines parallel or nearly so, hardly or only slightly nearer to sublateral lines than to each other, enclosing a space 1·7–2·0 times as long as broad; setae equal, anterior pair distinctly behind middle and about twice as far from front edge of scutellum as from posterior setae. Dorsellum 2·2–2·5 times as broad as long. Propodeum about as long as dorsellum, shiny, with extremely fine and weak superficial reticulation; median carina with small triangular basal fovea, slightly expanded posteriorly. Legs of medium length and thickness; hind femora about 4 times as long as broad; spur of mid tibia 0·65–0·70 length of basitarsus; fourth tarsomere shorter than basitarsus. Forewing 2·1–2·2 times as long as broad; costal cell shorter than *M*, 9–10 times as long as broad; *SM* with 3–6 dorsal setae; *M* thin, 3·5–4·0 times length of *ST*, its front edge with 10–23 setae; *ST* at 45°–47°, very thin proximally, expanded slightly beyond middle to form a small oblong stigma; *PM* rudimentary or a very short stub; speculum moderate-sized, extending as a narrow strip below *M* nearly to *ST*; wing beyond it moderately thickly pilose; cilia 0·20–0·38 length of *ST*. Hindwing rounded or obtuse; cilia 0·17–0·37 breadth of wing. Gaster ovate, in average specimens as long as or slightly longer than head plus thorax, in very small ♀ up to 1·4 times as long as head plus thorax, usually slightly broader than thorax, 1·7–2·0 times as long as broad, acute; last tergite as broad as or very slightly broader than long; ovipositor sheaths projecting at most very slightly; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at or slightly beyond half length of gaster.

Body black, rarely with some reddish markings but usually with at most the following parts brownish or testaceous: mouth-edge narrowly, facial sutures, dorsellum partly or wholly, upper angle of mesopleuron. (Two females from Germany, reared from *Mikiola fagi*, have the following parts reddish testaceous: orbits or head extensively, sometimes sides of pronotum, scapulae more or less, prepectus, propodeum, meso- and metapleura more or less, gaster ventrally at base or mainly, in one ♀ also basal quarter of gaster dorsally; legs including all coxae, and tegulae, testaceous.) Antennal scape black, sometimes with base and tip brown; pedicellus usually brown or testaceous at apex; flagellum brown. Coxae black or mainly so; legs otherwise testaceous, with femora often extensively or mainly black; hind tibiae often, mid tibia sometimes, more or less infuscate medially; trochanters and fore tarsi sometimes more or less infuscate. Very small specimens tend to have less extensive pale markings on the body and darker legs. Tegulae testaceous, sometimes brownish posteriorly or wholly so. Wings hyaline, venation pale testaceous to brownish, *SM* often darker than the rest. Length 1·2–2·7 mm.

♂. The antenna (Fig. 540) was drawn from what is probably a rather small specimen, hence larger ones might be expected to have relatively longer funicular segments. Scape about 3 times as long as broad, reaching median ocellus, with ventral plaque about 0·33 length of scape; pedicellus plus flagellum about 1·7 times breadth of mesoscutum; pedicellus about 1·7 times as long as broad, hardly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 much shorter than F2, quadrate, following segments subequal in length, each at least twice as long as broad; clava not broader than F3, distinctly longer than F3 plus F4, about 6 times as long as broad, with C1 nearly twice as long as broad, C2 fully twice and a little longer than C1, C3 twice as long as broad; whorled setae very long, those of F1 reaching to tip of F4. Genitalia (Fig. 630).

MATERIAL EXAMINED

1 ♂, many ♀. **Czechoslovakia, Denmark, France, Germany, Great Britain, Italy, Netherlands, Yugoslavia.**

HOSTS. *Hartigiola annulipes* (Hartig) and *Mikiola fagi* (Hartig) on *Fagus*.

COMMENT. Erdös included *lycidas* in his key to Hungarian species of *Tetrastichus* (1971: 238) but from the list of hosts cited he had at least three species under that name.

Aprostocetus (Aprostocetus) lycidoides sp. n.

(Fig. 429)

♀. Differs from ♀ of *lycidas* as follows. Head with temples slightly longer, nearly or just 0·25 length of eyes (about 0·12 in *lycidas*). Antenna (Fig. 429) with scape only reaching middle of median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus 2·5–3·0 times as long as broad, slightly longer than F1, with more numerous setae; funicular segments on average slightly longer, F1 2·20–2·45 times, F2 2·0–2·2 times, F3 1·5–1·8 times as long as broad; clava broader, 2·35–2·50 times as long as broad, with spine about 0·37 length of C3. Mid lobe of mesoscutum slightly broader than long; median line distinct; 5–6 adnotaular setae on each side. Spur of mid tibia fully 0·75 length of basitarsus. Forewing: *SM* with 5–7 dorsal setae; *M* about 3·5 times length of *ST*.

Body black; upper angle of mesopleuron testaceous. Antennal scape and pedicellus black, the latter testaceous beneath and broadly so at apex; flagellum brown. Coxae, and about proximal 0·75 of all femora, black; trochanters partly fuscous; hind tibiae black with bases and tips pale, mid tibiae with fuscous postmedian ring; fourth tarsomere of all legs brown; legs otherwise testaceous. Tegulae black. Wings hyaline, venation yellowish. Length 2·1–2·2 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **Greece**: Lésvos, Vigla, 5 km WNW. of Andissa, 5.x.1973 (*A. C. & W. N. Ellis*) (ITZ). Paratype. 1 ♀, same data as holotype (MJG).

HOST. Unknown.

Aprostocetus (Aprostocetus) aethiops (Zetterstedt) comb. rev.

(Figs 443, 448, 632)

? *Eulophus Ericae* Dufour, 1837: 91. Syntypes ♂ ♀, FRANCE (not located).

Entedon aethiops Zetterstedt, 1838: 428. Lectotype ♀, SWEDEN: Lyngen (ZI), designated by Graham (1961*b*: 57) [examined].

Cirrospilus Nerio Walker, 1839*a*: 295. Lectotype ♀, GREAT BRITAIN (BMNH), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

? *Cirrospilus Prosymna* Walker, 1839*a*: 304. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined].

Cirrospilus Vicellius Walker, 1839*a*: 307. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

Cirrospilus Teridae Walker, 1839*f*: 236. Lectotype ♀, GREAT BRITAIN, near Edinburgh (RSM), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

Entedon Spartii Ratzeburg, 1852: 211. Syntypes ♀, GERMANY (destroyed). NEOTYPE ♀, WEST GERMANY: Niedersachsen, Bentheim, iv.1977, reared from broom pod (*B. Nübel*) (ITZ), here designated [examined].

Aprostocetus aethiops (Zetterstedt) Graham, 1961*b*: 57.

Tetrastichus aethiops (Zetterstedt) Askew, 1961: 239; Domenichini, 1966*a*: 164; 1966*b*: 16; Aldrey, 1983: 50.

Aprostocetus sp. near *aethiops* (Zetterstedt); Parnell, 1963: 268–271.

Dalla Torre (1898: 19) cited *Eulophus ericae* Dufour as a doubtful synonym of *Tetrastichus nerio* Walker, which is a synonym of *aethiops* (Zetterstedt). This seems possible though the question cannot be settled until fresh material is reared from the original host. Dufour (1837: 91) stated 'Hab. in larvis gallaecolis Ericae scopariae', i.e. those of *Cecidomyia* (=*Perrisia*) *ericoscopariae* Dufour. Bouček & Askew (1968: 144) stated that *Eulophus ericae* had been reared 'from galls on *Sarothamnus scoparius*'. The specific name given to the species by Dufour, and his statement that it emerged 'des galles produites par la larve de la

Cecidomyie de la bruyère à balais', show that this is incorrect. Evidently these authors confused *Erica scoparia* L. ('bruyère à balais') with *Sarothamnus scoparius* ('genêt à balài').

I am not certain whether the lectotype ♂ of *Cirrospilus prosymna* Walker belongs to *aethiops* or to *pallipes* (Dalman), but I think possibly to the former.

Ratzeburg's original material of *Entedon spartii* was reared from '*Curculio spartii*'. The host of the neotype chosen is uncertain but may have been a cecidomyiid in the pods of broom (*Sarothamnus scoparius*).

♀. Head usually not quite as broad as mesoscutum, occasionally just as broad; structure as in *lycidas*. Antenna (Fig. 448) with scape 0·85–0·90 length of eye, 3·5–3·8 times as long as broad, nearly or just reaching level of vertex; pedicellus plus flagellum not or hardly greater than breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, very slightly shorter than or equal in length to F1; funicle proximally somewhat stouter than pedicellus, slightly thicker than in *lycidas*, its segments usually decreasing very slightly in length, sometimes subequal, F1 2·0–2·5 times, F2 1·6–2·0 times, F3 1·2–1·6 times as long as broad; clava slightly broader than F3, as long as or hardly longer than F2 plus F3, 2·4–2·7 times as long as broad, rather obtuse, with C1 quadrate or slightly transverse, spine about 0·33 length of C3, with apical seta more than half length of spine. Thorax 1·40–1·55 times as long a broad; propodeal slope 50°–60°. Pronotum and mid lobe of mesoscutum as in *lycidas* but the latter usually a little broader than long, occasionally as long as broad, with 4–8 adnotaular setae on each side. Scutellum (Fig. 443) 1·30–1·55 times as broad as long; submedian lines slightly to distinctly nearer to sublateral lines than to each other, usually curved outwards at front ends, converging at most slightly posteriorly, enclosing a space 1·6–1·9 times as long as broad; length of setae 0·7–0·8 distance between submedian lines. Other thoracic features as in *lycidas*. Legs as in *lycidas* but spur of mid tibia 0·9–1·0 length of basitarsus. Forewing with costal cell 9–11 times as long as broad; *M* 3·1–3·9 times length of *ST*, its front edge with 11–17 setae. Gaster ovate to long-ovate, slightly to distinctly longer than head plus thorax, 1·7–2·5 times as long as broad; last tergite very slightly to somewhat broader than long; ovipositor sheaths projecting slightly.

Colour as in darker forms of *lycidas*; fore femora at least slightly infuscate at base, often broadly black, mid and hind femora black proximally, hind femora sometimes broadly so; hind tibiae often more or less infuscate medially, sometimes mainly black; fore tarsi usually testaceous with fourth segment brownish, occasionally only basitarsus pale and the rest darkening gradually to tip. Tegulae varying from testaceous to blackish. Length (1·3–) 2·0–2·5 mm.

One ♀ from Britain has the hind part of the scapulae reddish. Possibly similar, or even more extensively reddish-marked specimens should be expected to occur in the southern part of the range of the species.

♂. Head, when undistorted, slightly narrower than mesoscutum (in *pallipes* as broad as or even a little broader than mesoscutum). Antenna hardly distinguishable from that of *pallipes* (Fig. 524); scape about 2·8 times as long as broad, with ventral plaque 0·29 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 about 0·6 length of F2 and not or hardly longer than broad, following segments increasing very slightly in length, F2 about twice, F3 and F4 each about 2·5 times as long as broad; clava not broader than F4, 5·5–6·7 times as long as broad. Genitalia (Fig. 632).

MATERIAL EXAMINED

7 ♂, many ♀. **Austria**, **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Netherlands**, **Sweden**, **Switzerland**.

Also recorded from Spain by Aldrey (1983) (material not seen).

HOSTS. *A. aethiops* has been reared from the galls of a number of Hymenoptera: Cynipidae on *Quercus robur*: *Andricus anthracinus* (Curtis) (=*ostreus* Hartig), *Cynips divisa* Hartig, *C. longiventris* Hartig, *C. quercusfolii* L., *Neuroterus albipes* (Schenck), *N. numismalis* (Geoffroy). In galls of *C. divisa* (and possibly also of *C. longiventris*) *aethiops* was found to be attacking the inquiline *Synergus nervosus* Hartig, whilst in galls of *C. quercusfolii* it possibly attacks *Synergus pallicornis* Hartig (see Askew, 1961). I have reared specimens from galls of *Andricus fecundator* (Hartig). Aldrey (1983: 50) records *aethiops* from galls of *Trigonaspis bruneicornis* Tavares on *Quercus pyrenaica* in Spain. I have swept specimens in more than one locality in Britain from foliage of *Betula*, which suggests the possibility of other hosts on that plant. Numerous specimens were reared by J. R. Parnell from broom pods in England (as ectoparasites of *Contarinia pulchripes* (Kieffer)). Parnell (1963: 270–271) believed that it was polyphagous, feeding on some other unknown host and only occasionally attacking the *Contarinia*. A few specimens reared from *Dasineura laricis* (F. Löw) in Austria (BMNH) appear to be indistinguishable from *aethiops*. Others, reared in Czechoslovakia by Capek and Strejěck from seeds of *Acer platanoides*, also seem to be conspecific. I do not think that a complex of 'sibling species' is involved but rather that *aethiops* is notably polyphagous.

Aprostocetus (Aprostocetus) culminis sp. n.

(Fig. 442)

♀. Scutellum (Fig. 442) with submedian lines hardly nearer to sublateral lines than to each other, converging distinctly caudad, enclosing a space 2·0–2·4 times as long as broad. Forewing with *M* 3·7–5·0 times length of *ST*.

Body black; mouth-edge sometimes testaceous, dorsellum sometimes with a testaceous mark on each side, occasionally wholly testaceous. Femora black with tips pale; hind tibiae black except bases and tips, mid tibiae with dark postmedian ring or mainly dark. Tegulae black. Wings slightly grey-tinged, venation brownish testaceous to fuscous. Length 1·4–2·2 mm.

Differs from ♀ *aethiops* chiefly in having submedian lines of scutellum rather closer together and converging very distinctly caudad, the enclosed space relatively longer. It also differs from most females of *aethiops* in having black tegulae, relatively darker legs and somewhat darker wing-venation.

♂. Unknown.

MATERIAL EXAMINED

24 ♀. Holotype ♀, **France**: Vaucluse, Mont Ventoux, above Fontaine de la Grave, swept from a small area of herbaceous plants in a gully, 1500 m, 14.viii.1976 (*Graham*) (BMNH).

Paratypes. 23 ♀, same data as holotype (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) capitigenae sp. n.

(Fig. 431)

♀. Differs from ♀ of *aethiops* chiefly in having the antennal funicle (Fig. 431) stouter and filiform, its segments equal or virtually equal in length, F1 1·50–1·85 times, F2 1·4–1·7 times, F3 1·40–1·45 times as long as broad; clava 2·7–2·9 times as long as broad, with spine about 0·5 length of C3; pedicellus 2·2–2·4 times as long as broad, as long as or a little longer than F1. Submedian lines of scutellum parallel and not or hardly curved outwards at their front ends, enclosed space tending to be slightly more elongate than in *aethiops*. Eyes about 1·15 times as long as broad. Mid lobe of mesoscutum with 3–5 adnotaular setae on each side.

Body black with upper angle of mesopleuron and usually the dorsellum partly or mainly, yellowish. Tibiae yellowish.

♂. Antenna with scape 0·95 length of eye, just reaching median ocellus, 3 times as long as broad, with ventral plaque 0·4 length of scape; pedicellus plus flagellum 1·5 times breadth of mesoscutum; pedicellus nearly twice as long as broad, 1·5 times as long as F1; funicle proximally distinctly stouter than pedicellus, tapering slightly distad; F1 about half as long as F2, quadrate; following segments equal in length, F2 twice, F3 2·1 times, F4 2·2 times as long as broad; clava hardly broader than F4, as long as F3 plus F4, about 4 times as long as broad, with C1 and C2 equal in length, each about 1·7 times as long as broad, C3 shorter; whorled setae long, those of F1 reaching to tip of F3. Gaster elliptic, slightly shorter and narrower than thorax.

Colour as in ♀ but gaster with a testaceous subbasal spot.

MATERIAL EXAMINED

1 ♂, 8 ♀. Holotype ♀, **Austria**: Steiermark, Wildalpen, reared 25.vii.1976 from gall of *Bayeria capitigena* (*M. J. Gijswijt*) (ITZ).

Paratypes. **Austria**: 1 ♂, 4 ♀, same data as holotype (MJG). **Netherlands**: 3 ♀, Wessum, ? from *Bayeria capitigena*, 1–4.viii.1971 (*M. J. Gijswijt*) (MJG).

HOST. *Bayeria capitigena* (Bremi) on *Euphorbia* sp.

Aprostocetus (Aprostocetus) pallipes (Dalman) **comb. rev.**

(Figs 444, 524, 633)

Entedon pallipes Dalman, 1820: 181, pl. 8, fig. 47. Lectotype ♀, SWEDEN (NR), designated by Graham (1961*b*: 56) [examined].

? *Cirrospilus Voranus* Walker, 1839*a*: 298. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 59) [examined].

Cirrospilus Orodes Walker, 1839*a*: 303. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 56–57) [examined]. [Synonymized by Graham, 1961*b*: 56.]

Cirrospilus Sucro Walker, 1839*a*: 308. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

Cirrospilus Faucula Walker, 1839*a*: 310–311. Syntypes ♂ ♀, GREAT BRITAIN: near London (partly destroyed ?). **Syn. n.**

Aprostocetus pallipes (Dalman) Graham, 1961*b*: 56.

Tetrastichus pallipes (Dalman) Domenichini, 1966*a*: 167; 1966*b*: 43.

No Walker material of *Cirrospilus faucula* has been found in BMNH. In the Dale collection (UM) there is a Walker ♀ labelled 'Faucula' in his handwriting; in Dale MS. 66 it is listed as 'from F. Walker, Southgate 1847'. It is evidently a syntype but has darkened fore and mid femora and thus fits Walker's description of his var. β. As no other material is forthcoming this specimen is taken as an indication of the identity of *faucula*.

♀. The only useful characters distinguishing *pallipes* from ♀ *aethiops* are those given in the key to females (couplets 214 to 217). Other small differences are as follows. Antenna (Fig. 444) with scape 0·72–0·80 length of eye, not quite reaching median ocellus; pedicellus usually about as long as F1, in large specimens very slightly shorter than F1, in dwarfs slightly longer than F1; flagellum slightly more clavate than in *aethiops*; funicle proximally often not stouter than the pedicellus, slightly stouter in large specimens, its segments on average rather shorter, F1 1·55–2·00 times, F2 1·5–1·8 times, F3 1·2–1·7 times as long as broad; clava distinctly broader than F3, slightly to distinctly longer than F2 plus F3, more pointed, with spine longer, about 0·5 length of C3, with apical seta 0·3–0·4 length of spine. Scutellum with submedian lines rather more parallel, not or hardly curved outwards at front end and converging only very lightly caudad. Hind femora 3·5–3·8 times as long as broad. Forewing with *M* 3·5–4·2 times length of *ST*, its front edge with 9–15 setae. Hindwing obtuse or subobtuse; cilia 0·25–0·33 breadth of wing. Gaster ovate, 1·7–2·2 times as long as broad, acute but not or hardly acuminate; last tergite usually a little broader than long, occasionally as long as broad; ovipositor sheaths plus postcercale 0·20–0·29 length of hind tibia.

Antennal flagellum tending to be paler than in *aethiops*, testaceous to brown. Length 1·0–2·0 mm (but rarely more than 1·7 mm).

♂. Head slightly broader than in ♂ *aethiops*. Antenna (Fig. 524) not very different from that of *aethiops*, at least in some specimens. Genitalia (Fig. 633).

MATERIAL EXAMINED

9 ♂, many ♀. **France**, **Great Britain**, **Netherlands**, **Sweden**, **Switzerland**, **Japan**; **Canada**.

HOSTS. *Oliogotrophus* (=*Semudobia*) species on *Betula*. Records are as follows. Netherlands: 1 ♂, 1 ♀, Duivenvoorde, i.1977, from *O. betulae* (*Winnertz*). Switzerland: 1 ♀, Glarus, Atlorn, v.1970 from *O.* sp. on *Betula pubescens*. Japan: 1 ♀, Honshu, Azegok, x.1975 from *O. skuhravae* (Roskam) on *Betula ermannii*; 1 ♂, 1 ♀, Hokkaido, Sappora, ii.1976 from *O. tarda* (Roskam) on *Betula platyphylla*. Canada: 1 ♂, Alberta, Bruderheim, i.1975 from *O. skuhravae* (Roskam) on *Betula pumila*. All above reared by J. C. Roskam and in his collection. *A. pallipes* has also been observed (Graham, 1960: 183) ovipositing in galls of *Iteomyia capreae* (L.) on *Salix*.

Aprostocetus (Aprostocetus) eriophyes (Taylor) **comb. n.**

(Fig. 447)

Tetrastichus eriophyes Taylor, 1909: 7; Zimmerman, 1913: 130–136; Mumford, 1931: 45–53; Listo, 1935: 42–45; Domenichini, 1966*a*: 172; 1966*b*: 30. Syntypes, GREAT BRITAIN (not located).

The syntypes of *eriophyes* might be expected to be in University Museum, Cambridge, but I was unable to find them there. There is no doubt regarding the identity of the species, however. An excellent redescription by Waterston, with good figures, was published by Mumford (1931).

♀. Not distinguished by any clear-cut morphological characters from ♀ of *pallipes*. The gaster of *eriophyes* (i.e., all specimens reared from acarine hosts) is on average a little longer, 2·1–2·4 times as long as broad, more acute and distinctly acuminate, with last tergite as long as or up to 1·2 times longer than broad; ovipositor sheaths plus postcercale 0·30–0·37 length of hind tibia. These small distinctions, coupled with the different host-group attacked by *eriophyes*, seem to justify its status as a valid species. Antenna (Fig. 447).

♂. Unknown to me.

MATERIAL EXAMINED
19 ♀. **Germany**, **Great Britain**, **Sweden**. Also recorded from **Finland** by Listo (1935) [material not seen].

HOSTS. *Cecidophyopsis ribis* (Westwood), *Phytoptus avellanae* Nalepa, *P. tiliae* Pagenstecher, *Aceria rudis* (Canestrini).

Aprostocetus (Aprostocetus) micantulus (Thomson) **comb. rev.**

(Figs 449, 450, 541, 643)

Tetrastichus micantulus Thomson, 1878: 295; Domenichini, 1966*a*: 172; 1966*b*: 39. LECTOTYPE ♀, SWEDEN: Lund (ZI), here designated [examined].
Aprostocetus micantulus (Thomson) Graham, 1961*b*: 59.

In my previous paper (Graham, 1961*b*: 59) I stated that I had chosen a female specimen from Thomson's series as possible lectotype; this selection is here validated. The lectotype bears a label 'L—d' (Lund) also a pencilled label 'micantulus' which may be a modern one.

♀. Appears to differ from that of *aethiops* only in the characters given in the key to species, couplet 217. Antenna (Fig. 449); gaster (Fig. 450).

♂. Antenna (Fig. 541) with scape shorter than an eye but reaching slightly above vertex, 2·9–3·0 times as long as broad, with ventral plaque 0·29–0·35 length of scape; pedicellus plus flagellum 1·7–1·8 times breadth of mesoscutum; pedicellus slightly longer than F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad, with F1 much shorter than F2 and subquadrate, F2 to F4 equal in length, each twice or slightly more than twice as long as broad; clava hardly as broad as F4, 5·5–6·7 times as long as broad, with C1 and C2 equal in length, each fully twice as long as broad, C3 short; whorled setae long, those of F1 reaching about level with tip of F3. Genitalia (Fig. 643).

MATERIAL EXAMINED
4 ♂, 38 ♀. **France**, **Great Britain**, **Italy**, **Sweden**.

HOST. *Dasineura abietiperda* Henschel according to Domenichini (1966*b*: 39). From Britain and France I have no reared specimens but have beaten some, considered to be *micantulus*, from foliage of *Pinus* spp.

Aprostocetus (Aprostocetus) myrsus (Walker) **comb. rev.**

Cirrospilus Myrsus Walker, 1839*a*: 296. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 57) [examined].
Aprostocetus myrsus (Walker) Graham, 1961*b*: 57.
Tetrastichus myrsus (Walker) Domenichini, 1966*a*: 169; 1966*b*: 41.

♀. The characters used to distinguish this sex and given in the key to females (couplet 204) are drawn from the lectotype.

♂. Unknown.

Material examined
1 ♀ (lectotype). **Great Britain**.

Host. Unknown (but see comment below).

Comment. I have examined a ♀ (Great Britain: Buckinghamshire, Slough, reared before 14.x.1936 from *Contarinia rumicis* (H. Löw) in seed of *Rumex crispus* (*J. A. Downes*)) which is very near the lectotype of *myrsus* and might be the same. However, I prefer to see more material before making a decision.

***Aprostocetus (Aprostocetus) lituratus* sp. n.**

(Figs 408, 409)

♀. Head as broad as mesoscutum, about 2·5 times as broad as long; temples about 0·2 length of eyes; POL about 1·7 OOL, OOL twice OD. Eyes small, 1·3 times as long as broad, separated by 1·25 times their length. Malar space 0·8 length of eye, sulcus slightly curved. Mouth 1·2 times malar space. Antenna (Fig. 409): toruli about level with lower edge of eyes; scape 0·8 length of eye, not reaching median ocellus; pedicellus plus flagellum hardly greater than breadth of mesoscutum; pedicellus slightly more than twice as long as broad, very slightly longer than F1; funicle proximally somewhat stouter than pedicellus, hardly thickening distad, F1 about 1·65 times, F2 1·4 times, F3 1·2 times as long as broad; clava slightly broader than F3, somewhat longer than F2 plus F3, nearly 3 times as long as broad, obtuse, spine very short, apical seta apparently absent; sensilla sparse, uniseriate, moderately long, subdecumbent. Thorax 1·4 times as long as broad; propodeal slope 50°. Pronotum very short. Mid lobe of mesoscutum 1·2 times as broad as long, moderately convex, shiny, with extremely fine, delicately engraved reticulation having short areoles, most about twice as long as broad; median line absent; 4 adnotaular setae on each side. Scutellum about 1·3 times as broad as long, moderately convex, shiny, with much finer and more delicately engraved reticulation than mesoscutum; submedian lines rather weak, somewhat nearer to sublateral lines than to each other, enclosing a space 2·1 times as long as broad; setae subequal, fine, their length about 0·6 distance between submedian lines, anterior pair twice as far from front edge of scutellum as from posterior setae. Dorsellum nearly 3 times as broad as long, hind edge curved. Propodeum medially as long as dorsellum, shiny, with extremely fine, obsolescent reticulation; median carina thin over its anterior two-thirds, with minute basal fovea. Legs of medium length and thickness; hind femora about 3·3 times as long as broad; spur of mid tibia 0·6 length of basitarsus, fourth tarsomere somewhat shorter than basitarsus. Forewing 2·2 times as long as broad; costal cell 12 times as long as broad; *SM* with 4 dorsal setae; *M* 1·25 times as long as costal cell and 4·2 times length of *ST*, its anterior margin with 15 setae; *ST* (Fig. 408) at about 50°, stigma rather small; *PM* a very distinct stub; speculum small, extending as a very narrow strip below *M* as far as *ST*; wing beyond it somewhat sparsely pilose, though more thickly distad; cilia 0·3 length of *ST*. Hindwing obtuse; cilia 0·3 breadth of wing. Gaster ovate, somewhat longer than head plus thorax, as broad as thorax, twice as long as broad, acute; last tergite somewhat broader than long; ovipositor sheaths projecting slightly; longest seta of each cercus about twice length of next longest, kinked.

Black; mouth-edge narrowly, trochanters, tips of femora and bases of tibiae very narrowly, tips of tibiae, and tarsi, testaceous, fourth tarsomere and pretarsus of all legs brown. Wings hyaline, venation brown. Length 1·6 mm.

♂. Unknown.

Material examined
1 ♀. Holotype ♀, **Poland**: Silesia, Nowy Kamień, 6.vii.1975, found with larvae of Anobiidae (Coleoptera) in wood of dry beech (*Fagus*) (*Z. Capecki*) (BMNH).

Host. Unknown.

Comment. Apparently not close to any other species of the *lycidas*-group; distinguished from them by the characters given in the key to females.

***Aprostocetus (Aprostocetus) claviger* (Thomson)**

(Figs 386, 387, 522)

Tetrastichus claviger Thomson, 1878: 296. Lectotype ♀, Sweden: Skåne, Vestra Vram, near Degeberga (*Thomson*) (ZI), designated by Graham (1961*b*: 58–59) [examined].

♀. Head somewhat collapsed and, in that state, hardly as broad as mesoscutum; ratio POL : OOL : OD not accurately measurable. Eyes about 1·3 times as long as broad. Malar space 0·6 length of eye, sulcus nearly straight. Mouth nearly twice malar space. Antenna (Fig. 386) with scape 0·87 length of eye, not reaching vertex; pedicellus plus flagellum 1·1 times breadth of mesoscutum; pedicellus about as long as F1, 2·1 times as long as broad; funicle proximally not stouter than pedicellus, filiform; its segments decreasing slightly in length, F1 2·3 times, F2 1·8 times, F3 1·55–1·70 times as long as broad; clava obviously broader than F3, slightly longer than F2 plus F3, 2·4 times as long as broad, with C1 and C2 subequal in length and each about as long as broad, C3 much shorter, spine about 0·35 length of C3, apical seta as long as spine; sensilla rather sparse, long and slender, uniseriate. Thorax about 1·3 times as long as broad; propodeal slope 50°–60°. Mid lobe of mesoscutum nearly 1·5 times as broad as long, with excessively fine engraved reticulation; median line fine but traceable throughout; 3 adnotaular setae on each side. Scutellum moderately strongly convex, about 1·5 times as broad as long, more finely reticulate than mesoscutum; submedian lines distinctly nearer to sublateral lines than to each other, enclosed space twice as long as broad; setae subequal, anterior pair far behind the middle. Dorsellum about 2·7 times as broad as long. Propodeum much as in *pygmaeus*. Legs of medium length and thickness; hind femora about 4 times as long as broad; spur of mid tibia as long as basitarsus. Forewing twice as long as broad; costal cell slightly shorter than *M*, 13·5 times as long as broad; *SM* with 4 dorsal setae; *M* not thin, 3 times length of *ST*, its front edge with about 13 setae; *PM* a short stub; *ST* (Fig. 387) not thin, distinctly curved, stigma rather large; speculum narrow, not extending below *M*, closed below; wing beyond it moderately thickly pilose. Hindwing obtuse; cilia about 0·4 breadth of wing. Gaster subcircular, not longer than thorax, about as broad as thorax, about 1·5 times as long as broad, with tip slightly acute; last tergite broader than long; longest seta of each cercus nearly twice length of next longest and projecting somewhat caudad of tips of ovipositor sheaths, the latter hardly projecting.

Body black, non-metallic, with at most mouth-edge narrowly, and upper angle of mesopleuron, testaceous. Antennal scape black; pedicellus darkened above, pale beneath; flagellum testaceous. Legs with coxae, and femora mainly, black; tibiae infuscate medially, tarsi darker distally, other parts testaceous. Wings hyaline, venation fulvous. Length 0·8–1·0 mm.

♂. Antenna (Fig. 522) with scape slightly shorter than eye, not reaching vertex, about 2·3 times as long as broad, ventral plaque about 0·5 length of scape; pedicellus plus flagellum somewhat greater than breadth of mesoscutum; pedicellus somewhat longer than F1 and 1·7 times as long as broad; flagellum proximally stouter than pedicellus but tapering distad; F1 much shorter than F2, quadrate, following segments subequal in length, each about twice as long as broad; clava distinctly broader than F4, about 3·5 times as long as broad, with C1 quadrate, C2 slightly longer, C3 distinctly shorter than C2; whorled setae moderately long, those of F1 reaching nearly to tip of F3.

Colour as in ♀ but face with a testaceous mark on each side of clypeus.

MATERIAL EXAMINED

2 ♂, 16 ♀ (syntypes). **Sweden**: Skåne, Vestra Vram (*Thomson*).

HOST. Unknown.

COMMENT. The specimens determined as *claviger* by Erdös (1954: 356) and Domenichini (1966*a*: 171) were misidentified (see *taxi*, p. 261).

Aprostocetus (Aprostocetus) ligus (Walker) **comb. rev.**

(Figs 398, 509, 638)

Cirrospilus Oxathres Walker, 1839*a*: 299. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined]. **Syn. n.**
Cirrospilus Ligus Walker, 1839*a*: 300. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined].
Aprostocetus ligus (Walker) Graham, 1961*b*: 60.
Tetrastichus ligus (Walker) Domenichini, 1966*b*: 37.

Although the name *oxathres* has page-priority over *ligus*, the latter is chosen as the valid name as its lectotype shows the diagnostic characters of the species more clearly.

♀ (new). Head about as broad as mesocutum, 2·3–2·4 times as broad as long; POL about 1·3 OOL, OOL

2·5 times OD. Eyes 1·30–1·35 times as long as broad, separated by 1·2 times their length. Malar space 0·66 length of eye, sulcus weakly curved. Mouth 1·3 times malar space. Length of setae on vertex hardly greater than OD. Antenna (Fig. 398) with scape 0·80–0·82 length of eye, just reaching lower edge of median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus twice or hardly more than twice as long as broad, as long as or very slightly longer than F1; funicle proximally as stout as or very slightly stouter than pedicellus, not or hardly thickening distad, its segments subequal in length, F1 1·7–2·0 times, F2 about twice, F3 about 1·8 times as long as broad; clava somewhat broader than F4, somewhat longer than F2 plus F3, 3·0–3·2 times as long as broad, pointed, with C1 quadrate or hardly longer than broad, C2 nearly as long as C1 and quadrate, C3 short, spine nearly as long as C3, with apical seta about 0·33 length of spine; sensilla rather sparse, uniseriate, long, decumbent with tips projecting. Thorax 1·5–1·6 times as long as broad; propodeal slope 45°–50°. Pronotum about 0·25 length of mesoscutum. Mid lobe of mesoscutum about as long as broad, moderately convex, shiny, reticulation with most areoles twice as long as broad; median line fine but traceable throughout; 3–4 adnotaular setae on each side. Scutellum 1·2–1·3 times as broad as long, strongly convex, sculptured like mesoscutum; submedian lines tending to be slightly nearer to sublateral lines than to each other, enclosing a space about twice as long as broad; setae subequal, their length nearly as great as distance between submedian lines, anterior pair very slightly behind middle, or in middle. Dorsellum about 2·5 times as broad as long. Propodeum medially as long as or very slightly longer than dorsellum; other features much as in *lycidas*. Legs as in *lycidas* and *aethiops* but spur of mid tibia fully as long as basitarsus. Forewing much as in *gaus* (Fig. 402), 2·0–2·1 times as long as broad; costal cell distinctly shorter than *M*, 13–15 times as long as broad; *SM* with 3–4 dorsal setae; *M* thin, 3·1–3·4 times length of *ST*, its front edge with 14–17 rather fine setae; *ST* at about 47°, very thin, its lower edge very slightly curved (concave), stigma small and narrow; speculum narrow but extending as a very narrow wedge for a short distance below *M*; wing beyond it relatively densely and uniformly pilose; cilia 0·33–0·35 length of *ST*. Hindwing pointed or acute; cilia 0·33–0·45 breadth of wing. Gaster ovate, about as long as head plus thorax, usually a little broader than thorax, 1·50–1·75 times as long as broad, not or only slightly acuminate; last tergite slightly to distinctly broader than long; tips of ovipositor sheaths hardly projecting; longest seta of each cercus nearly twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Black, non-metallic; mouth-edge and upper angle of mesopleuron sometimes testaceous; flagellum fuscous; trochanters partly, tips of femora, testaceous; tibiae testaceous with hind tibiae sometimes mainly fuscous, mid tibiae sometimes with dark postmedian ring; fore tarsi fuscous, mid and hind tarsi testaceous with tips fuscous. Tegulae black. Wings slightly grey-tinged, venation testaceous. Length 1·4–1·6 mm.

♂. Antenna (Fig. 509) with scape 1·05–1·10 length of eye, reaching far above vertex, slender, with ventral plaque 0·25–0·27 length of scape, outer surface of scape with several setae remote from its ventral edge; pedicellus plus flagellum 2·1–2·2 times breadth of mesoscutum; pedicellus 1·7–1·8 times as long as broad, slightly shorter than F1; funicle slender but proximally slightly stouter than pedicellus, tapering slightly distad; F1 slightly shorter than F2, 1·7–2·0 times as long as broad, following segments increasing very slightly in length, F2 2·6–2·8 times, F3 and F4 about 3 times as long as broad; clava slightly broader than F4, about as long as F3 plus F4, 7·0–7·5 times as long as broad, with C1 and C2 subequal, each 2·5–3·0 times as long as broad, C3 much shorter; whorled setae very long, those of F1 reaching about to tip of F4. Genitalia (Fig. 638).

Colour as in ♀.

MATERIAL EXAMINED

10 ♂, 6 ♀. **Great Britain**: 2 ♂ (syntypes of *oxathres* and *ligus*), England, Middlesex, near London [Southgate] (*F. Walker*) (BMNH); 1 ♂, 4.viii.1967, 5 ♀, 7.viii.1967, 1 ♀, 10.viii.1967 (*Graham*) (BMNH); 7 ♂, Berkshire, Wytham, amongst *Phalaris* near River Thames, 2.vii.1960 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) subanellatus Graham

(Figs 374, 527, 640)

Aprostocetus subanellatus Graham, 1961*c*: 291–294. Holotype ♀, IRELAND: Selshan, Lough Neagh, 26.vi.1957 (*Graham*) (UM) [examined].

Full descriptions of both sexes were given in my earlier paper (Graham, 1961*c*).

Material examined

Several ♂, many ♀. **France**, **Great Britain**, **Ireland**.

Host. Unknown. I have several times swept *subanellatus* from *Agrostis* spp. (Gramineae) and it may have a host on these grasses, probably a species of Diptera: Cecidomyiidae.

Aprostocetus (Aprostocetus) tenuiradialis sp. n.

(Figs 399, 401)

♀. Antennae (Fig. 399) with scape 0·70–0·75 length of eye, not quite reaching median ocellus; F1 1·9–2·2 times, F2 1·6–1·9 times, F3 1·35–1·65 times as long as broad; clava 2·20–2·85 times as long as broad; other features much as in *ligus*. Forewing (Fig. 401) with *M* 2·75–3·30 times length of *ST*; lower edge of *ST* straight; speculum moderate-sized; wing beyond speculum less thickly pilose than in *ligus*. Hindwing subobtuse in large specimens, pointed in small ones. Other features as in *ligus*.

Colour as in *ligus*. Length 1·25–1·90 mm.

♂. Unknown.

Material examined

47 ♀. Holotype ♀, **Great Britain**: England, Berkshire, Wytham Wood, 15.vii.1959 (*Graham*) (BMNH).

Paratypes. **France**: 2 ♀, Seine et Marne, Forêt de Fontainebleau, 26.vi.1976, 2 ♀, 2.vii.1976 (*Graham*) (BMNH). **Great Britain**: England, Berkshire, Wytham Wood, 4 ♀, 5.vii.1959, 14 ♀, 9.vii.1959, 26 ♀, 15.vii.1959 (*Graham*) (BMNH).

Host. Unknown.

Comments. Domenichini (1966*a*: 169) recorded *Tetrastichus novatus* (Walker) from Wytham, Berkshire on the basis of some specimens which I sent to him. I now believe these specimens to have been *tenuiradialis*.

Aprostocetus (Aprostocetus) novatus (Walker) **comb. rev.**

Cirrospilus Novatus Walker, 1839*a*: 312. Lectotype ♀, Great Britain: near London (BMNH), deisgnated by Graham (1961*b*: 58) [examined].

Aprostocetus novatus (Walker) Graham, 1961*b*: 57–58.

Tetrastichus novatus (Walker) Domenichini, 1966*a*: 169, in part (syntypes of *novatus* only).

♀. Differs from ♀ of *ligus* in having costal cell of forewing as long as *M*; fourth tarsomere of mid and hind legs virtually as long as basitarsus; tibiae of mid and hind legs mainly black.

♂. Unknown.

Material examined

2 ♀ (syntypes). **Great Britain**: near London, Southgate (*F. Walker*) (BMNH).

Host. Unknown.

Comment. I have not seen any fresh material which agrees completely with the syntypes of *novatus*.

Aprostocetus (Aprostocetus) gaus (Walker) **comb. rev.**

(Figs 400, 402, 526)

Cirrospilus Gaus Walker, 1839*a*: 308. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 57) [examined].

Cirrospilus Tenerus walker, 1839*a*: 308. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

Cirrospilus Orsedice Walker, 1839*a*: 308. Lectotype ♀, Great Britain: near London (BMNH), deisgnated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]

Cirrospilus Asopus Walker, 1839*a*: 314. Lectotype ♀, Great Britain: near London (BMNH), designated by Graham (1961*b*: 57) [examined]. [Synonymized by Graham, 1961*b*: 57.]
Aprostocetus gaus (Walker) Graham, 1961*b*: 57.
Tetrastichus gaus (Walker) Domenichini, 1966*a*: 169; 1966*b*: 33.

♀. Antenna (Fig. 400) with scape 0·80–0·85 length of eye, reaching about to level of median ocellus; pedicellus plus flagellum 1·20–1·33 times breadth of mesoscutum; pedicellus 1·7–1·9 times as long as broad, very slightly longer than F1; funicle proximally not or hardly stouter than pedicellus, hardly thickening distad, its segments subequal in length, F1 1·7–2·0 times, F2 1·55–1·85 times, F3 1·35–1·52 times as long as broad; clava somewhat broader than F3, somewhat longer than F2 plus F3, 2·7–3·0 times as long as broad, acutely pointed, with spine nearly as long as C3; other features as in *ligus*. Mid lobe of mesoscutum with (2–) 3 adnotaular setae on each side. Other features of thorax and wings as in *ligus*. Fourth segment of mid and hind tarsi as long as basitarsus. Gaster long-ovate, slightly longer than head plus thorax, 2·2–2·5 times as long as broad, acute; last tergite slightly broader than long; ovipositor sheaths projecting very slightly. Forewing (Fig. 402).

Colour as in *ligus*. Length 0·9–1·3 mm.

♂. Antenna (Fig. 526) with scape 0·85–0·87 length of eye, 2·7–2·8 times as long as broad, just reaching median ocellus, with ventral plaque 0·30–0·35 length of scape; pedicellus plus flagellum 1·8–1·9 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 about 0·6 length of F2, subquadrate, following segments subequal in length, each 2·0–2·2 times as long as broad; clava not broader than F4, somewhat longer than F3 plus F4, 5·0–5·5 times as long as broad, with C1 and C2 each fully twice as long as broad, C3 short; whorled setae very long, those of F1 reaching slightly beyond tip of F3.

MATERIAL EXAMINED

4 ♂, 18 ♀. **Great Britain**, **Ireland**.

HOST. Unknown.

Aprostocetus (Aprostocetus) palustris sp. n.

(Fig. 392)

♀. Antenna (Fig. 392) with scape 0·85–0·92 length of eye, long and slender, reaching to level of vertex or even slightly above it (in specimens with undistorted head), its outer surface with a few setae remote from the ventral edge; pedicellus plus flagellum 1·05–1·15 times breadth of mesoscutum; clava with spine 0·6–0·7 length of C3; other features much as in *gaus*. Thorax, legs and wings as in *gaus* and *ligus*. Gaster as in *gaus*.

Colour as in *gaus*. Length 1·40–1·65 mm.

♂. Unknown.

MATERIAL EXAMINED

16 ♀. Holotype ♀, **Great Britain**: England, Berkshire, Wytham Mead, in a marshy place, 12.vii.1960 (*Graham*) (BMNH).

Paratypes. **Great Britain**: 14 ♀, same data as holotype; 1 ♀, Middlesex, Southgate, 12.vii.1968 (*Graham*) (BMNH).

HOST. Unknown.

COMMENTS. This species also much resembles *perone*, the ♀ of which differs in being on average larger (length 1·6–2·1 mm) with antennal pedicellus not longer than F1, the latter 2·3–2·4 times as long as broad, flagellum black.

Aprostocetus (Aprostocetus) pygmaeus (Zetterstedt)

(Figs 393, 528, 642)

Entedon pygmaeus Zetterstedt, 1838: 428. Lectotype ♀, Sweden: Bossekop (ZI), designated by Graham (1961*b*: 58) [examined].

Cirrospilus Conon Walker, 1839*a*: 296. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 58) [examined]. **Syn. n.**
? *Cirrospilus Plangon* Walker, 1839*a*: 298. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 59) [examined].
Cirrospilus Xixuthrus Walker, 1839*a*: 306–307. LECTOTYPE ♀, GREAT BRITAIN: near London (UM), here designated [examined]. **Syn. n.**
Cirrospilus Sandace Walker, 1839*a*: 311. Lectotype ♂, GREAT BRITAIN: near London (BMNH), deisgnated by Graham (1961*b*: 60) [examined]. **Syn. n.**
Cirrospilus Deioces Walker, 1839*a*: 315. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 58) [examined]. **Syn. n.**
Cirrospilus Zenocia Walker, 1839*d*: 418. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 58) [examined]. **Syn. n.**
Cirrospilus Triarius Walker, 1848: 151, 236. Lectotype ♂, GREAT BRITAIN: England (BMNH), designated by Graham (1961*b*: 60) [examined]. **Syn. n.**
Tetrastichus obscuripes Thomson, 1878: 296. Lectotype ♀, SWEDEN: Öland (ZI), designated by Graham (1961*b*: 58) [examined]. **Syn. n.**
Aprostocetus conon (Walker) Graham, 1961*b*: 58.
Tetrastichus conon (Walker) Domenichini, 1966*a*: 169; 1966*b*: 26; Erdös, 1971: 241–242.

Graham (1961*b*: 58) adopted the name *conon* (Walker) for the present species because *pygmaeus* (Zetterstedt) became a secondary homonym of *pygmaea* (Nees) which he had transferred from *Sphenolepis* to *Aprostocetus*. *Sphenolepis* is now regarded as a valid genus, hence *pygmaeus* (Zetterstedt) is available in *Aprostocetus*, where it takes priority over *conon* (Walker).

The only Walker ♀ of *Cirrospilus xixuthrus* Walker in BMNH does not agree well with his description (Graham, 1961*b*: 60). The Dale collection (UM) contains a Walker ♀ labelled 'Xixuthrus' in his handwriting; Dale MS 66 lists *xixuthrus* 'from F. Walker Southgate 1847' and the note clearly refers to this specimen. It agrees well with the description and is designated lectotype.

Graham (1961*b*: 58) designated a ♀ lectotype for *Cirrospilus deioces* Walker and reported that its antennae did not seem to belong to the rest of the specimen. Further examination shows that the antennae certainly belong to a ♀ of *pygmaeus* (Zetterstedt) whilst the body represents another species. The antennae are now taken to indicate the identity of *deioces*, by restriction. I have also found a further syntype of *deioces* in the Haliday collection (NMI). It bears my serial number 1270 and belongs to *pygmaeus* (Zetterstedt) which confirms the synonymy. A ♀ in the Greville collection (RSM) named as *deioces* is also *pygmaeus*.

♀. Head very slightly broader than mesoscutum, 2·25–2·50 times as long as broad; POL 1·25–1·40 OOL, OOL nearly or about twice OD. Eyes about 1·3 times as long as broad, separated by about 1·3 times their length. Malar space 0·6 length of eye, sulcus nearly straight. Mouth about 1·2 times malar space. Antenna (Fig. 393) with scape distinctly shorter than eye, not or only just reaching median ocellus, 3·6–4·0 times as long as broad; pedicellus plus flagellum not or hardly greater than breadth of mesoscutum; pedicellus 1·8–2·1 times as long as broad, usually slightly to distinctly longer than F1, occasionally equal to it in length; funicle proximally as stout or a little stouter than pedicellus, thickening very slightly distad; funicular segments subequal in length or (larger ♀) tending to decrease very slightly, F1 1·2–2·2 times, F2 1·2–1·7 times, F3 1·0–1·1 times as long as broad; clava distinctly broader than F3, distinctly longer than F2 plus F3, 2·0–2·3 times as long as broad, bluntly pointed, with C1 slightly transverse, C2 and C3 progressively shorter, spine fully 0·75 length of C3, with apical seta 0·30–0·35 length of spine; sensilla rather sparse on funicle, more numerous on clava, long, with elongate decumbent bases and shorter projecting blades. Thorax about 1·5 times as long as broad; propodeal slope 50°–60°. Pronotum very short. Mid lobe of mesoscutum as broad as or very slightly broader than long, moderately convex, shiny, reticulation with most areoles 2·5–3·0 times as long as broad; median line extremely fine but usually traceable in some lights; 3–5 adnotaular setae on each side. Scutellum 1·2–1·3 times as broad as long, moderately strongly convex, sculptured like mesoscutum; submedian lines usually slightly nearer to sublateral lines than to each other, sometimes hardly so, enclosing a space 2·0–2·4 times as long as broad; setae equal or subequal, their length nearly as great as distance between submedian lines, anterior pair very slightly behind middle. Dorsellum about twice as broad as long. Propodeum as in *lycidas*. Legs as in *lycidas* but hind femora 4·0–4·5 times as long as broad, spur of mid tibia virtually or just as long as basitarsus. Forewing 2·15–2·35 times as long as broad; costal cell distinctly shorter than *M*, 9·5–13·0 times as long as broad; *SM* with 3–5 dorsal setae; *M* not thick, 3·0–4·0 times length of *ST*, its front edge with 10–16 setae; *ST* at 45°–50°, thin proximally, its lower edge not straight but weakly concave basad of the small oblong stigma; *PM* rudimentary or a short stub; speculum rather small, hardly extending below *M*; wing beyond it moderately thickly pilose, thickly distad; cilia 0·45–0·65 length of *ST*. Hindwing in largest ♀ subobtuse, in small ♀ acute; cilia 0·33–0·50 breadth of wing. Gaster ovate to long-ovate, as long as or slightly longer than head plus thorax, as broad as or slightly broader than thorax, 1·5–2·4 times as long as broad, acute but not or hardly acuminate; last tergite as broad as or broader than long; ovipositor sheaths hardly projecting; longest seta of each cercus nearly twice length of next longest; kinked; tip of hypopygium at about half length of gaster.

Black, non-metallic; mouth-edge and upper angle of mesopleuron obscurely testaceous; tip of pedicellus sometimes pale, flagellum brown to fuscous. In nominotypical form the trochantelli are usually pale, tips of femora rather narrowly testaceous, fore tibiae partly to wholly testaceous, bases and tips of mid and hind tibiae narrowly so; fore tarsi fuscous, mid and hind tarsi testaceous proximally darkening to fuscous at tips. Very dark specimens have legs black with only knees very narrowly pale, paler specimens have mid and hind tibiae broadly testaceous at bases and tips. Tegulae black or brown. Wing subhyaline or slightly grey-tinged, venation testaceous to fuscous. Length 1·05–1·90 mm.

A form which occurs on *Elymus* (= *Agropyron*) species in Denmark, Great Britain and Sweden has the mid and hind tibiae mainly or even wholly yellowish testaceous and the tegulae usually yellowish at least anteriorly, sometimes wholly so. I thought at one time that this might represent a distinct species but now regard it as a colour-form of *pygmaeus*. It is connected with the nominotypical form by intermediates.

♂. Antenna (Fig. 528) with scape 0·80–0·85 length of eye, reaching lower edge of median ocellus, 2·30–2·55 times as long as broad, with ventral plaque 0·32–0·39 length of scape; pedicellus plus flagellum 1·60–1·75 times breadth of mesoscutum; pedicellus 1·6–1·9 times as long as broad, slightly longer than F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad; F1 about 0·6 length of F2, quadrate or nearly so; following segments subequal in length, F2 1·6–2·0 times, F3 and F4 2·0–2·6 times as long as broad; clava not broader than F4, as long as or somewhat longer than F3 plus F4, 4·1–5·2 times as long as broad, with C1 and C2 each about twice as long as broad, C3 somewhat shorter; whorled setae moderately long, those of F1 reaching somewhat beyond tip of F2 but not reaching tip of F3. Genitalia (Fig. 642).

Colour as in ♀, with similar range of variation; gaster black.

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **Denmark**, **Finland**, **France**, **Great Britain**, **Greece**, **Hungary**, **Ireland**, **Italy**, **Norway**, **Sweden**.

HOSTS. *Dasineura alopecuri* (Reuter): 1 ♀, Great Britain: England, Hertfordshire, Harpenden, reared 26.v.1931 (*H. F. Barnes*) (BMNH); this was determined by C. Ferrière as *roesellae* Nees, a species the identity of which is doubtful. It clearly represents the species referred to by Barnes (1946: 94). I have also examined a ♀, Finland: Tikkurila, reared from Cecidomyiidae in seeds of *Alopecurus pratensis* (*Y. Hukkinen*) (BMNH). The species is extremely abundant on various grasses during the late spring and summer and may well have several hosts.

Aprostocetus (Aprostocetus) phragmitinus (Erdös) **comb. rev.**

(Figs 394, 529, 641)

Geniocerus phragmitinus Erdös, 1954: 357. LECTOTYPE ♀, HUNGARY: Gárdony, 10.vii.1953 (*Erdös*) (TM), here designated [examined].

Aprostocetus phragmitinus (Erdös) Graham, 1961*b*: 59.

Tetrastichus phragmitinus (Erdös) Domenichini, 1966*a*: 173; 1966*b*: 45; Kostjukov, 1978*b*: 458; Erdös, 1971: 242.

There were 174 ♂ and 26 ♀ syntypes of *Geniocerus phragmitinus* in the Erdös collection (TM). I have separated one ♀ and labelled it as lectotype.

♀. Antenna (Fig. 394) with F1 0·70–0·85 length of pedicellus and 1·0–1·3 times as long as broad, equal in length to or hardly longer than F2, the latter 1·0–1·3 times as long as broad; other features as in *pygmaeus*. Mid lobe of mesoscutum with 3–4 (–5) adnotaular setae on each side. Forwing: *SM* with 3–4 (–5) dorsal setae; *M* with 9–13 setae on its front edge. Hindwing acute. Other features as in *pygmaeus*.

Colour as in *pygmaeus* but tibiae tending to be relatively less infuscate, though in some British specimens the hind tibiae are mainly black and the mid tibiae broadly infuscate medially. Length 0·7–1·3 mm.

♂. Antenna (Fig. 529) with scape about 0·8 length of eye, 2·2–2·5 times as long as broad; pedicellus plus flagellum 1·40–1·45 times breadth of mesoscutum; pedicellus 1·6–1·7 times as long as broad, somewhat longer than F1; funicle proximally hardly as stout as pedicellus, hardly thickening distad; F1 distinctly shorter than F2, 1·00–1·25 times as long as broad, following segments subequal in length, each 1·8–2·5 times as long as broad; clava hardly broader than F4, 3·8–4·5 times as long as broad, with C1 occupying nearly or about one-third of the total length and 1·3–1·5 times as long as broad, C2 slightly longer and 1·5–1·7 times as long as broad, C3 much shorter and conical, spine about 0·6 length of C3, with apical seta somewhat shorter than spine; whorled setae moderately long, those of F1 reaching well beyond tip of F2; clava without long whorled setae. Genitalia (Fig. 641).

MATERIAL EXAMINED

Many ♂, ♀. **Great Britain**: ♂, ♀, England, Hampshire, Keyhaven, 5.vi.1978, swept from *Phragmites australis* (*J. W. Ismay*) (BMNH). **Hungary**: 174 ♂, 26 ♀, Gárdony, Velencei tó, reared 10.vii.1953 from *Phragmites* cut the previous year (*Erdös*) (TM). **Sweden**: ♂, ♀, Skåne, Yddingen, 10.viii.1959, swept from *Phragmites* (*Graham*) (BMNH).

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae on *Phragmites*.

COMMENTS. The ♀ of *phragmitinus* is very similar to ♀ *pygmaeus*, differing mainly in its smaller size; the smaller ♀ of *pygmaeus* may be very difficult to distinguish from larger *phragmitinus*. The ♂ of *phragmitinus* is easily distinguishable from that of *pygmaeus* by the lack of whorled setae on the antennal clava.

Aprostocetus (Aprostocetus) zoilus (Walker) **comb. rev.**

(Figs 357, 359, 362, 521, 655)

[*Cirrospilus caudatus* Westwood; Walker, 1839*a*: 324–325, in part. Misidentification.]

Cirrospilus Zoilus Walker, 1839*a*: 325. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 55) [examined].

Aprostocetus zoilus (Walker) Graham, 1961*b*: 55.

Tetrastichus zoilus (Walker) Domenichini, 1966*a*: 160; 1966*b*: 54.

♀. Very close to *emesa* and *catius*: the main distinctions are given in the key to females, couplet 128. As compared with *emesa*, the gaster of *zoilus* tends to be longer and more acuminate (owing to collapse and lateral compression), 4–6 or more times as long as broad. Antenna (Fig. 357), forewing (Fig. 362), gaster, distal part (Fig. 359).

Mid and hind tibiae testaceous to yellowish, rarely with a weak brownish postmedian ring. Tegulae sometimes narrowly testaceous anteriorly. Occasionally some parts of the thorax and gaster have a very weak bluish or bronze tinge.

♂. Antenna (Fig. 521) with scape 1·05 length of eye, reaching very slightly above level of vertex, 2·5–2·7 times as long as broad, with ventral plaque 0·39–0·44 length of scape; pedicellus plus flagellum 2·10–2·23 times breadth of mesoscutum; pedicellus 1·75–1·85 times as long as broad, very slightly longer than F1; funicle proximally slightly stouter than pedicellus, tapering very slightly distad; F1 at most half as long as F2, 1·05–1·22 times as long as broad, following segments subequal in length, F2 2·0–2·5 times, F3 2·0–2·9 times, F4 2·5–3·0 times as long as broad; clava slightly broader than F4, as long as F3 plus F4, about 5 times as long as broad, with C1 and C2 subequal in length, each about twice as long as broad, C3 very short; whorled setae long, those of F1 reaching nearly or just to tip of F3. Genitalia (Fig. 655).

MATERIAL EXAMINED

3 ♂, 22 ♀. **Great Britain, Ireland**.

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae on Gramineae.

Aprostocetus (Aprostocetus) emesa (Walker) **comb. rev.**

(Figs 358, 360, 363, 654, 685, 723)

Cirrospilus Deipyrus Walker, 1839*a*: 299. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined]. [Synonymized by Domenichini, 1966*a*: 160.]

Cirrospilus Rabirius Walker, 1839*a*: 305. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined]. **Syn. n.**
Cirrospilus Emesa Walker, 1839*a*: 324. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 55) [examined].
Cirrospilus Anteius Walker, 1839*a*: 324. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 55) [examined]. [Synonymized by Graham, 1961*b*: 55.]
[*Cirrospilus caudatus* Westwood; Walker, 1839*a*: 324–325, in part. Misidentification.]
Aprostocetus emesa (Walker) Graham, 1961*b*: 55.
Tetrastichus emesa (Walker) Domenichini, 1966*a*: 160; 1966*b*: 29.

♀. Head as broad as or slightly broader than mesoscutum, about 2·5 times as broad as long; POL about 1·3 OOL, OOL 2·7–3·0 times OD. Eyes about 1·4 times as long as broad, separated by somewhat more than their length. Malar space 0·55 length of eye, sulcus hardly curved. Mouth nearly 1·5 times malar space. Antenna (Fig. 358) with scape slightly shorter than eye, reaching median ocellus, its outer surface with 1–4 setae in addition to those on its ventral edge; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus 2·0–2·1 times as long as broad, about as long as F1; anelli (Fig. 723); funicle proximally hardly or very slightly stouter than pedicellus, thickening very slightly distad; F1 and F2 subequal in length, F3 slightly shorter, F1 1·8–2·1 times, F2 1·7–2·0 times, F3 1·3–1·4 times as long as broad; clava slightly broader than F3, 2·1–1–2·2 times as long as broad, bluntly pointed, with C1 subquadrate, C2 hardly shorter but slightly transverse, C3 much shorter, spine about 0·5 length of C3, with apical seta hardly shorter than spine; sensilla less numerous on funicle, more so on clava, uniseriate, long and slender, with moderately long bases and long projecting blades. Thorax 1·3–1·4 times as long as broad; propodeal slope 45°–50°. Pronotum short. Mid lobe of mesoscutum slightly broader than long, moderately convex, moderately shiny, reticulation with most areoles 3–4 times as long as broad; median line fine, often distinct but sometimes only discernible in certain lights; 3–5 adnotaular setae on each side. Scutellum 1·55–1·70 times as broad as long, strongly convex, sculptured like mesoscutum; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 1·7–2·0 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair slightly behind middle. Dorsellum about 3 times as broad as long. Propodeum broadly and deeply emarginate, medially slightly shorter than dorsellum; median carina very short; other features as in *aethiops*. Legs much as in *aethiops*, but spur of mid tibia 0·80–0·85 length of basitarsus, fourth tarsomere nearly as long as basitarsus. Forewing (Fig. 363) 2·30–2·45 times as long as broad; costal cell distinctly shorter than *M*, 12·5–14·5 times as long as broad; *SM* with 3–5 dorsal setae; *M* rather thin, 3·6–4·0 times length of *ST*, its front edge with 10–13 long setae; *ST* at 45°–47°, very thin proximally, stigma small and oblong; speculum narrow, extending a little way below *M*; wing beyond it thickly pilose, especially distad; cilia 0·33–0·50 length of *ST*. Hindwing bluntly to sharply pointed; cilia 0·33–0·45 breadth of wing. Gaster proper lanceolate, 1·5–1·8 times as long as head plus thorax, slightly narrower than thorax, 3·0–3·6 times as long as broad, its sides subparallel in basal half, apex slightly acuminate; last tergite (Fig. 360) slightly longer than broad; postcercale short, from about half to nearly as long as longest cercal seta; ovipositor sheaths plus postcercale 0·75–0·90 (?–1·2) length of hind tibia; tip of hypopygium at or slightly beyond half length of gaster. Hypopygium (Fig. 685).

Black, non-metallic; dorsellum sometimes more or less testaceous, usually also upper angle of mesopleuron, sometimes scapular flanges; pedicellus often testaceous beneath and at apex, flagellum brown to fuscous; trochanters often partly testaceous; tips of all femora somewhat broadly, bases and tips of tibiae narrowly to broadly, and tarsi at least proximally but sometimes mainly, testaceous. Wings hyaline, venation brownish testaceous to brown. Length including ovipositor sheaths 1·7–2·7 mm.

♂. Antenna (Fig. 505) with scape 3·0–3·3 times as long as broad, its outer surface with several setae remote from the ventral edge, with ventral plaque about 0·3 length of scape; pedicellus plus flagellum about 1·5 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly longer than F1; funicle proximally hardly stouter than pedicellus, filiform or tapering almost imperceptibly; F1 much shorter than F2 and 1·2–1·3 times as long as broad, following segments subequal in length, each about twice as long as broad; clava slightly broader than F4, about as long as F3 plus F4, about 3·5 times as long as broad, with C1 and C2 subequal, each 1·1–1·3 times as long as broad, C3 short and not or hardly longer than broad; whorled setae very long, those of F1 reaching slightly beyond tip of F3. Genitalia (Fig. 654).

Colour as in ♀; gaster black.

MATERIAL EXAMINED

12 ♂, many ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Ireland**, **Norway**, **Sweden**.

HOST. *Dasineura alopecuri* (Reuter): ♂ ♀ reared in Great Britain by Barnes (1946: 94) but determined as 'caudatus Westwood' (BMNH).

Aprostocetus (Aprostocetus) catius (Walker) comb. rev.

(Fig. 361)

? *Cirrospilus Vaccus* Walker, 1839*a*: 299. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 60) [examined].
Cirrospilus Catius Walker, 1839*a*: 323. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 55) [examined].
Aprostocetus catius (Walker) Graham, 1961*b*: 55.
Tetrastichus catius (Walker) Domenichini, 1966*a*: 160; 1966*b*: 22.

The lectotype of *Cirrospilus vaccus* may represent the male of *catius*, though this is not certain.

♀. Differs from ♀ of *emesa* only in the characters given in the key to females, couplet 129. The gaster (not counting ovipositor sheaths) is 1·3–1·5 times as long as head plus thorax and 2·6–2·9 times as long as broad, tending to have its sides slightly curved; distal part (Fig. 361).

Length including ovipositor sheaths 1·50–1·85 mm.

♂. Not definitely associated (see note above on lectotype of *vaccus*).

MATERIAL EXAMINED
20 ♀. **Czechoslovakia**, **Great Britain**, **Ireland**.

HOST. Unknown, but probably some species of Diptera: Cecidomyiidae on Gramineae.

Aprostocetus (Aprostocetus) stigmaticalis sp. n.

(Fig. 388)

♀. Differs from ♀ of *pygmaeus* in having a larger stigma in the forewing (Fig. 388); POL nearly twice OOL; eyes 1·4 times as long as broad; mouth about 1·6 times malar space; mid lobe of mesoscutum slightly broader than long; anterior setae of scutellum in middle and equidstant from front margin of sclerite and from posterior setae; dorsellum larger; propodeum rather more deeply though not broadly emarginate, slightly shorter than dorsellum; spur of mid tibia 0·80–0·85 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Antenna similar to that of *pygmaeus* but with F3 slightly longer than broad, clava equal in length to or hardly longer than F2 plus F3, apical seta of spine virtually as long as the spine. Pedicellus twice as long as broad, about as long as F1; F1 1·75–1·80 times, F2 1·55–1·70 times, F3 1·3–1·4 times as long as broad; clava 2·00–2·15 times as long as broad. Thorax 1·4 times as long as broad; propodeal slope about 60°. Forewing (Fig. 388) about 2·1 times as long as broad; costal cell 12·0–13·5 times as long as broad; *M* slightly thickened, 3·25–3·40 times length of *ST*; *PM* a short to moderately long stub; distal part of wing rather less thickly pilose than in *pygmaeus*; cilia 0·28–0·35 length of *ST*. Hindwing pointed; cilia 0·28–0·37 breadth of wing. Gaster ovate, nearly or about as long as head plus thorax, 1·55–1·85 times as long as broad; last tergite slightly to much broader than long.

Colour as in *pygmaeus* but tibiae less broadly infuscate, sometimes wholly testaceous. Length 1·40–1·55 mm.

♂. Unknown.

MATERIAL EXAMINED
7 ♀. Holotype ♀, **Great Britain**: England, Lancashire, Freshfield, 25.vii.1961, swept from foliage of *Betula pubescens* (*Graham*) (BMNH).

Paratypes. 6 ♀, same data as holotype (BMNH).

Aprostocetus (Aprostocetus) forsteri (Walker) comb. rev.

(Figs 415, 416, 517, 647)

? *Eulophus flavovarius* Nees, 1834: 164. Syntypes ♂ ♀, GERMANY (destroyed).

Eulophus Forsteri Walker, 1847: 230. Lectotype ♀, AUSTRIA (UM), designated by Graham (1961*b*: 56) [examined].
[*Tetrastichus cirtinus* (Förster); Szelényi, 1941: 407–409. Misidentification.]
Aprostocetus forsteri (Walker) Graham, 1961*b*: 56.
Tetrastichus forsteri (Walker) Domenichini, 1966*a*: 164; 1966*b*: 31; Kostjukov, 1978*b*: 461.
Tetrastichus foersteri Graham [sic]; Erdös, 1971: 229.

♀. Head slightly to very distinctly less broad than mesoscutum, 2·4–2·5 times as broad as long; POL 1·3–1·5 OOL, OOL 1·5–1·8 OD. Eyes 1·35–1·45 times as long as broad, virtually bare. Malar space 0·65–0·70 length of eye, sulcus nearly straight. Mouth 1·15 malar space. Antenna (Fig. 415) with scape 0·80–0·85 length of eye, not quite reaching median ocellus; pedicellus plus flagellum equal to or hardly greater than breadth of mesoscutum; pedicellus 2·2–2·5 times as long as broad, varying from very slightly shorter, to very slightly longer, than F1; funicle proximally distinctly stouter than pedicellus, thickening slightly distad, its segments usually decreasing in length, occasionally subequal, F1 1·6–2·1 times, F2 1·5–2·0 times, F3 1·0–1·5 times as long as broad; clava distinctly broader than F3, about as long as F2 plus F3, 2·1–2·4 times as long as broad, subobtuse, with C1 quadrate or hardly longer than broad, C2 and C3 progressively shorter, spine about 0·15 length of C3, with apical seta slightly longer than spine; sensilla numerous, uniseriate (or imperfectly biseriate on F1 in large specimens), long, decumbent with tips projecting slightly. Thorax 1·3–1·4 times as long as broad; propodeal slope 60°–70°. Pronotum short. Mid lobe of mesoscutum as broad as or a little broader than long, moderately convex, shiny, reticulation with most areoles 2–3 times as long as broad; median line distinct though sometimes very fine; 4–7 adnotaular setae on each side. Scutellum 1·25–1·45 times as broad as long, moderately convex, sculptured like mesoscutum but with shorter areoles; submedian lines distinctly nearer to sublateral lines than to each other, tending to converge slightly caudad, enclosing a space 1·65–2·00 times as long as broad; setae subequal, their length slightly less than distance between submedian lines, anterior pair usually nearly 3 times (occasionally slightly less) as far from front edge of scutellum as from posterior setae. Dorsellum 3·0–3·5 times as broad as long, hind edge obtusely angulate. Propodeum not broadly but rather deeply emarginate, as long as or slightly shorter than dorsellum, shiny, with extremely fine obsolescent reticulation; median carina short, with triangular basal fovea. Legs of medium length and thickness; hind femora 3·50–3·75 times as long as broad; spur of mid tibia about 0·83 length of basitarsus, fourth tarsomere distinctly shorter than basitarsus. Forewing 2·20–2·25 times as long as broad; costal cell nearly as long as *M*, 8·5–9·0 times as long as broad, the row of setae on its lower surface sometimes sparse or broken medially; *SM* with 3–6 dorsal setae; *M* tending to be slightly thickened, 3·2–3·6 times length of *ST*, its front edge with (9–) 11–17 setae; *ST* at about 50°, nearly straight, only moderately thin proximally and very slightly thickened in distal half, stigma small and oblong; *PM* rudimentary; speculum moderate-sized, extending as a wedge below *M* and sometimes reaching *ST*; a small area between *ST* and *PM*, and another below *ST*, tend to be bare; wing beyond speculum rather sparsely pilose; cilia 0·15–0·27 length of *ST*. Hindwing obtuse or rounded; cilia 0·13–0·20 breadth of wing. Gaster (Fig. 416) ovate or long-ovate, 1·8–2·5 times as long as broad, acute, usually slightly acuminate; last tergite as broad as or slightly broader than long; ovipositor sheaths projecting slightly; longest seta of each cercus 1·6–1·7 times length of next longest; tip of hypopygium at about half length of gaster.

Very variable in colour. Southern and central European females are usually mainly or extensively yellow though occasionally mainly dark specimens occur. In palest forms body and legs are yellow, with a reddish geminate blotch on front of mesoscutum and a smaller spot on front of each scapula; the following parts fuscous to black: lower part of occipital surface, a spot on front of pronotum and a small one next to each spiracle, axillae more or less, spots on sides of gaster, ovipositor sheaths, mesosternum and front surface of hind coxae. Dark markings next appear on mesopleuron. base of gaster beneath, propodeum, scapulae and ocellar triangle. Next, the reddish blotch of the mesoscutum is replaced by black, the gastral spots become transverse bands; the hind coxae, later mid and fore coxae more or less, and bases of femora, become black. Then the sutures of the thorax, including scutellar lines, become black whilst the transverse bands of the gaster begin to coalesce. Darkest forms are black with following parts yellow: orbits, face more or less, hind edge of pronotum and of mesoscutum, dorsellum, small spots on gaster, tips of femora, the tibiae, tarsi mainly. The dark markings, when restricted, show a hardly perceptible bluish tinge but in extensively dark specimens they have a very distinct bluish to greenish blue lustre. Antenna brown to fuscous, in pale forms with scape wholly yellow, pedicellus yellow beneath and apically; in darker forms scape is infuscate dorsally or wholly dark and pedicellus is mainly dark. Tegulae yellow. Wings hyaline, venation pale to chrome-yellow. Length 1·5–2·8 mm.

♂. Antenna (Fig. 517) with scape 0·8 length of eye, not reaching median ocellus, 2·7–2·8 times as long as broad, with ventral plaque 0·35–0·39 length of scape; pedicellus plus flagellum about 1·5 times breadth of mesoscutum; pedicellus 1·70–1·85 times as long as broad, hardly longer than F1; funicle proximally somewhat stouter than pedicellus, nearly filiform; F1 somewhat shorter than F2 and hardly longer than broad, following segments tending to increase very slightly in length, F2 1·8–1·9 times, F3 2·0–2·1 times, F4 2·2–2·3 times as long as broad; clava not broader than F4, as long as or slightly longer than F3 plus F4, 4·3–4·7 times as long as broad, with C1 and C2 each nearly twice as long as broad, C3 slightly shorter; whorled setae only moderately long, those of F1 reaching somewhat beyond tip of F2. Genitalia (Fig. 647).

Colour as ♀ but yellow markings tend to be less extensive. Gaster black with a yellow subbasal transverse band.

MATERIAL EXAMINED

3 ♂, 42 ♀. **Austria**, **Czechoslovakia**, **Cyprus**, **France**, **Hungary**, **Italy**, **Spain**, **Sweden**, **Switzerland**, **Yugoslavia**.

HOSTS. *Isocolus rogenhoferi* Wachtl on *Centaurea pannonica* and *C. sadlerana* (Szelényi, 1941), *Aylax salviae* (Giraud) (Domenichini, 1966*b*). I reared a number of specimens from flower-heads of *Centaurea paniculata* in southern France (? possibly as parasites of *Aylax jaceae* (Schenck)).

Aprostocetus (Aprostocetus) viridinitens sp. n.

(Figs 417, 418, 519, 648)

♀. Very close to *forsteri* and differs mainly in the characters given in the key to females, couplet 152. Other details are as follows. Head very slightly narrower than mesoscutum; POL 1·5–1·7 OOL, OOL 1·9–2·1 OD. Antenna (Figs 417, 418) with pedicellus plus flagellum equal to, or very slightly less than breadth of mesoscutum; pedicellus usually very slightly to distinctly longer than F1, rarely only as long; funicular segments decreasing slightly in length, F1 1·3–2·0 times, F2 1·3–1·6 times, F3 1·0–1·5 times as long as broad; clava slightly broader than F3, at least very slightly longer than F2 plus F3, 2·1–2·4 times as long as broad, with spine slightly longer than in *forsteri*. Mid lobe of mesoscutum with 3–6 adnotaular setae on each side. Scutellum with anterior pair of setae usually about twice as far from front edge of scutellum as from posterior setae, occasionally slightly more than twice; submedian lines enclosing a space 1·6–1·9 times as long as broad. Forewing: *M* with 6–15 setae on its front edge. Gaster 2·35–3·50 times as long as broad, 1·75–1·90 length of thorax, more actue and acuminate than in *forsteri*.

Body with at most mouth-edge, upper angle of mesopleuron, and dorsellum, more or less yellow. Antennal scape and pedicellus black; flagellum and sometimes apex of pedicellus testaceous to fuscous. Coxae black; trochanters fuscous, trochantelli yellow; femora mainly black, their tips broadly yellow; tibiae yellow, hind pair sometimes, mid pair occasionally, brown to black medially (especially in smaller specimens; fore tarsi mainly brown, mid and hind tarsi pale yellow with third and fourth segments sometimes fuscous. Tegulae yellowish anteriorly, sometimes wholly so except hind edge. Wings hyaline, venation yellowish to testaceous. Length 1·0–2·5 mm.

♂. Antenna (Fig. 519) with scape about 0·8 length of eye, just reaching median ocellus, 2·55–2·70 times as long as broad, with ventral plaque 0·38–0·48 length of scape; pedicellus plus flagellum 1·50–1·65 times breadth of mesoscutum; pedicellus 1·80–1·95 times as long as broad, very slightly longer than F1; funicle proximally somewhat stouter than pedicellus, hardly tapering distad; F1 much shorter than F2 and 1·1–1·4 times as long as broad; following segments subequal in length, F2 1·9–2·0 times, F3 1·9–2·0 times, F4 1·9–2·4 times as long as broad; clava hardly broader than F4, at least slightly longer than F3 plus F4, 4·0–4·8 times as long as broad, with C1 and C2 each 1·5–1·8 times as long as broad; whorled setae moderately long, those of F1 reaching slightly beyond tip of F2. Genitalia (Fig. 648).

Colour as ♀ but tegulae sometimes wholly dark. Gaster entirely black.

MATERIAL EXAMINED

3 ♂, 26 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 7.ix.1968 (*Graham*) (BMNH).

Paratypes. **Great Britain**: 3 ♀, England, Middlesex, Southgate, 19.viii.1966, 1 ♀, 4.ix.1968, 2 ♀, 7.ix.1968, 1 ♂, 14.vii.1969, 2 ♀, 28.viii.1969, 1 ♂, 8.vi.1970, 1 ♂, 15.vi.1970, 2 ♀, 25.vi.1970, 11 ♀, 1.ix.1970; Berkshire, Thatcham Reeds, 2 ♀, 26.viii.1964 (*Graham*) (BMNH). **France**: 2 ♀, Vaucluse, Mont Ventoux, *ca* 700 m, 11.viii.1976 (*Graham*) (BMNH).

HOSTS. Unknown. Several of the paratypes were swept from *Artemisia vulgaris* and it is possible that *viridinitens* may have a host on this plant.

Aprostocetus (Aprostocetus) ptarmicae sp. n.

(Figs 518, 645)

♀. Antenna with pedicellus plus flagellum fully equal to or slightly greater than breadth of mesoscutum; pedicellus about as long as F1; funicle proximally very slightly stouter than pedicellus, its segments decreasing slightly in length, F1 2·0–2·1 times, F2 1·5–1·8 times, F3 1·2–1·6 times as long as broad; clava distinctly broader than F3, slightly longer than F2 plus F3, 2·35–2·75 times as long as broad, slightly pointed, with C1 quadrate or slightly longer than broad, C2 and C3 progressively shorter, spine about 0·5 length of C3; sensilla moderately numerous and moderately long, uniseriate, with long decumbent bases and short blades. Mid lobe of mesoscutum a little broader than long; median line very fine; 3–4 (–5) adnotaular setae on each side. Scutellum with submedian lines enclosing a space 1·7–1·8 times as long as broad; anterior pair of setae 2·0–2·5 times as far from front edge of scutellum as from posterior setae. Dorsellum about 2·5 times as broad as long, hind edge obtusely angulate. Spur of mid tibia 0·90–0·95 length of basitarsus. Forewing with costal cell distinctly shorter than *M*; *M* 3·5–4·1 times length of *ST*, its front edge with 9–12 setae; speculum rather small, hardly extending below *M*; wing beyond moderately thickly pilose, more thickly distad. Gaster lanceolate, longer than head plus thorax, nearly as broad as thorax, 2·4–3·0 times as long as broad, strongly acute and slightly acuminate; last tergite as long as or slightly longer than broad.

Body black with a weak bluish tint. Antennal scape and pedicellus black, flagellum fuscous. Coxae, trochanters partly, femora except their tips rather narrowly, and tibiae except bases and tips narrowly, black; fore tarsi fuscous, mid and hind tarsi yellowish at base but darkening gradually to tips; other parts of legs testaceous. Tegulae black. Forewings usually lightly infumate, venation testaceous to brown, parastigma and stigma sometimes darker. Length 1·2–2·0 mm.

♂. Antenna (Fig. 518) with scape about 0·85 length of eye, reaching median ocellus, with ventral plaque 0·30–0·36 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus 1·8–2·0 times as long as broad, from hardly to distinctly longer than F1; funicle very slightly stouter than pedicellus, filiform; F1 1·3–1·6 times as long as broad, much shorter than F2; following segments decreasing very slightly in length, F2 2·1–2·3 times, F3 2·0–2·4 times, F4 1·8–2·0 times as long as broad; clava hardly broader than F4, about as long as F3 plus F4, 4·2–4·7 times as long as broad, with C1 and C2 each nearly twice as long as broad; whorled setae only moderately long, those of F1 reaching somewhat beyond tip of F2. Genitalia (Fig. 645).

Colour as in ♀.

MATERIAL EXAMINED

5 ♂, 40 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, swept from *Achillea ptarmica*, 16.viii.1971 (*Graham*) (BMNH).

Paratypes. **Great Britain**: 3 ♂, 4 ♀, England, Surrey, Bookham Common, reared 28.viii.1948 from *Rhopalomyia ptarmicae* (*M. Niblett*) (BMNH); 2 ♂, 8 ♀, Middlesex, Southgate, 11.viii.1971, 15 ♀, 6.viii.1971, 12 ♀, 10.viii.1972, on flowers of *Achillea ptarmica* (*Graham*) (BMNH).

HOST. *Rhopalomyia ptarmicae* Vallot in galled heads of *Achillea ptarmica*.

Aprostocetus (Aprostocetus) rufiscapus sp. n.

(Fig. 364)

♀. Head distinctly narrower than mesoscutum; POL 1·3 OOL, OOL 1·8 OD. Antenna (Fig. 364) with scape 0·92 length of eye, nearly reaching median ocellus; pedicellus plus flagellum 1·1 times breadth of mesoscutum; pedicellus 2·1 times as long as broad, slightly shorter than F1; funicle proximally distinctly stouter than pedicellus, filiform, its segments decreasing very slightly in length, F1 2·2 times, F2 2·0 times, F3 1·9 times as long as broad; clava hardly broader than F3, hardly as long as F2 plus F3, about 3·5 times as long as broad, pointed, with C1 about 1·5 times as long as broad, C2 and C3 progressively shorter, spine nearly 0·5 length of C3, with apical seta much shorter than spine; sensilla moderately numerous, uniseriate (irregularly so on F1), long, decumbent. Mid lobe of mesoscutum very slightly broader than long. Submedian lines of scutellum enclosing a space twice as long as broad. Propodeum moderately broadly emarginate, medially slightly shorter than dorsellum; callus with 4 setae. Other thoracic characters as in *forsteri*. Hind coxae almost vertical, slightly more than twice as long as broad; hind femora 4·4 times as long as broad; spur of mid tibia 0·78 length of basitarsus. Forewing with costal cell slightly shorter than *M*; *SM* with 5 dorsal setae; *M* 3·7 times length of *ST*, its front edge with 15 setae; *ST* at about 47°; other wing-characters as in *forsteri.* Gaster lanceolate, 1·75 times length of thorax, as broad as thorax, about 2·5 times as long as broad, strongly acute and acuminate; last tergite 1·6 times as long as broad; longest seta of each cercus about 1·7 times length of next longest, kinked; tip of hypopygium at about 0·4 length of gaster.

Body black with weak bluish metallic tint in places. Antennal scape reddish testaceous, infuscate at tip; pedicellus and flagellum brown, pedicellus paler at apex. Coxae black, legs otherwise testaceous with hind femora infuscate over proximal two-thirds, fore and mid femora slightly darkened beneath; pretarsi fuscous, fourth segment of all tarsi slightly darkened distally. Tegulae testaceous. Wings hyaline, venation yellowish testaceous. Length 2·5 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 24.viii.1970 (*Graham*) (BMNH).

HOST. Unknown.

COMMENT. This species much resembles *viridinitens* in facies but differs in having a much longer and pointed antennal clava, with a long and prominent spine; hind coxae almost vertical; antennal scape, and legs, mainly testaceous.

Aprostocetus (Aprostocetus) brachycerus (Thomson) **comb. rev.**

(Figs 370, 515, 649)

Tetrastichus brachycerus Thomson, 1878: 291; Domenichini, 1966*a*: 171; 1966*b*: 20. Lectotype ♀, SWEDEN: Öland (ZI), designated by Graham (1961*b*: 58) [examined].
Aprostocetus brachycerus (Thomson) Graham, 1961*b*: 58.

♀. Head about as broad as mesoscutum, 2·3–2·4 times as broad as long; POL 1·5–1·7 OOL, OOL 1·8–2·0 OD. Eyes about 1·3 times as long as broad, virtually bare. Malar space 0·66 length of eye, sulcus straight. Mouth hardly 1·2 times malar space. Length of setae on vertex nearly equal to OD. Antenna (Fig. 370) with scape 0·7–0·8 length of eye, not reaching median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, as long as or hardly longer than F1; funicle proximally distinctly stouter than pedicellus, thickening slightly distad; funicular segments decreasing very slightly in length, F1 1·6–1·9 times, F2 1·1–1·4 times, F3 1·0–1·2 times as long as broad; clava distinctly broader than F3, slightly to distinctly longer than F2 plus F3, 2·0–2·5 times as long as broad, pointed, with segments decreasing rapidly in length, C1 and C2 as broad as or slightly broader than long, spine about 0·35 length of C3, with apical seta fully as long as spine; sensilla moderately numerous, uniseriate, long, decumbent with very short or short projecting blades. Thorax 1·3–1·4 times as long as broad; propodeal slope about 60°. Mid lobe of mesoscutum slightly broader than long, shiny, reticulation with most areoles 2·0–2·5 times as long as broad; median line distinct; 3–5 adnotaular setae on each side. Scutellum 1·35–1·40 times as broad as long, moderately strongly convex, more finely sculptured than mesoscutum; submedian lines distinctly nearer to sublateral lines than to each other, enclosing a space 1·8–2·0 times as long as broad; setae equal, their length nearly as great as distance between submedian lines, anterior pair nearly or quite 3 times as far from front edge of scutellum as from posterior setae. Dorsellum 2·5–2·8 times as broad as long, hind edge obtusely angulate. Propodeum medially about as long as dorsellum; median carina distinct, foveate at base, thin medially but expanding somewhat caudad. Legs of medium length; hind femora 3·6–3·8 times as long as broad; spur of mid tibia 0·95–1·00 length of basitarsus, fourth tarsomere slightly shorter than basitarsus. Forewing 2·00–2·15 times as long as broad; costal cell slightly shorter than or as long as *M*, 9·0–9·5 times as long as broad; *SM* with 3–6 dorsal setae; *M* tending to be slightly thickened, 3·00–3·75 times length of *ST*, its front edge with 10–14 setae; *ST* at 47°–50°, rather thin proximally but expanding at about half its length to form the small oblong stigma; *PM* rudimentary or a short stub; speculum moderate-sized, extending as a narrow wedge a little way below *M*, closed below or open at base; wing beyond speculum rather sparsely to moderately thickly pilose, more thickly distad; cilia 0·28–0·35 length of *ST*. Hindwing obtuse; cilia 0·15–0·30 breadth of wing. Gaster ovate, nearly or about as long as head plus thorax, about as broad as thorax, 1·3–1·8 times as long as broad, acute but not acuminate; last tergite slightly to very distinctly broader than long; ovipositor sheaths projecting very slightly; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body black, with a weak bluish or greenish blue metallic tint on at least the mesoscutum and scutellum, usually also on most of head and thorax, and sometimes gaster. Antennae blackish. Legs black with a bluish tinge; trochanters sometimes pale apically; tips of femora, anterior surface of fore tibia, bases and tips of mid and hind tibiae (sometimes only their bases) and first segment or first and second segments of mid and hind tarsi, yellowish testaceous. Tegulae blackish. Wings hyaline, venation testaceous to brown (or fuscous in northern specimens). Length 1·1–2·0 mm.

♂. Antenna (Fig. 515) with scape 0·75–0·82 length of eye, reaching lower edge of median ocellus, 2·5–2·9 times as long as broad, with ventral plaque 0·25–0·34 length of scape; pedicellus plus flagellum 1·50–1·55 times breadth of mesoscutum; pedicellus 1·7–2·0 times as long as broad, distinctly longer than F1; funicle proximally slightly stouter than pedicellus, hardly tapering distad; F1 much shorter than F2, quadrate; following segments subequal in length, each 1·7–2·0 times as long as broad; clava slightly broader than F4, somewhat longer than F3 plus F4, 4·3–4·6 times as long as broad, with C1 1·5–2·0 times as long as broad, C2 slightly longer and 1·7–2·3 times as long as broad, C3 much shorter; whorled setae long, those of F1 reaching about to tip of F3. Gaster oblong, as long as but much narrower than thorax, with ventral plica. Genitalia (Fig. 649).

Colour as in ♀.

MATERIAL EXAMINED

Many ♂, ♀. **Czechoslovakia**, **Denmark**, **France**, **Germany**, **Great Britain**, **Hungary**, **Ireland**, **Sweden**.

HOSTS. Not definitely ascertained. I have examined 9 ♂ and 5 ♀ reared from seeds of *Daucus carota* (Great Britain: England, Essex, Benfleet, 29.v.1966 (*R. R. Askew*) (RRA)). The species frequently occurs in Britain on flowers of Umbelliferae. Domenichini (1966*b*: 20) recorded *Contarinia medicaginis* Kieffer and *Dasineura ignorata* (Wachtl) as hosts of *brachycerus*. I have not examined the material on which these records were based and feel that confirmation is desirable.

Aprostocetus (Aprostocetus) epilobii sp. n.

(Fig. 371)

♀. Antenna (Fig. 371) with pedicellus 2·2–2·5 times as long as broad, from nearly as long to very slightly longer than F1; F1 1·8–2·0 times, F3 1·15–1·40 times as long as broad; clava 2·5–3·0 times as long as broad. Other features as in *brachycerus*.

♂. Antenna very similar to that of *brachycerus* but with clava about 5 times as long as broad. Forewing with *M* 1·15 times as long as costal cell, the latter 10–11 times as long as broad.

MATERIAL EXAMINED

1 ♂, 14 ♀. Holotype ♀, **Netherlands**: 's Graveland, 20.viii.1976, reared from gall of *Dasineura epilobii* (*M. J. Gijswijt*) (ITZ).

Paratypes. **Netherlands**: 4 ♀, 's Graveland, 10.viii.1968, 1 ♀, vii.1959, 1 ♀, beginning ix.1959, 1 ♂, 6 ♀, 20.viii.1976, all from galls of *D. epilobii* (*M. J. Gijswijt*) (MJG); 1 ♀, Leersum, 5.vi.1972, from same host (*H. J. Vlug*) (MJG).

HOST. *Dasineura epilobii* (F. Löw) on *Chamaenerion angustifolium*.

Aprostocetus (Aprostocetus) deplanatus (Walker)

(Figs 404, 639, 722)

Tetrastichus deplanatus Walker, 1874: 321. Lectotype ♀, U.S.S.R.: Amurland (BMNH), designated by Graham (1961*b*: 58) [examined].

Aprostocetus deplanatus (Walker) Graham, 1961*b*: 58.

♀. Eyes 1·20–1·25 times as long as broad. Structure otherwise mainly as in *brachycerus*. Antenna (Fig. 404) with pedicellus 2·1–2·4 times as long as broad, as long as or very slightly longer than F1; anelli (Fig. 722); F1 1·7–1·8 times, F2 1·25–1·40 times, as long as broad, F3 quadrate; clava 1·95–2·20 times as long as broad; other features as in *brachycerus*. Thorax as in *brachycerus*. Spur of mid tibia fully as long as basitarsus. Forewing much as in *brachycerus*; costal cell 8·5–11·0 times as long as broad; the speculum tends, especially in large specimens, to be extended as a narrow strip below *M*, sometimes reaching *ST*; a small zone above and below *ST* tends to be bare in some specimens. Gaster ovate, similar to that of *brachycerus*.

Body black, non-metallic. Antennal scape and pedicellus black, scape sometimes pale at tip, pedicellus often testaceous beneath and at apex; flagellum brownish testaceous to brown. Coxae black; legs otherwise testaceous with trochanters sometimes partly infuscate, proximal 0·6–0·8 of hind femora black, mid femora rather less broadly black, fore femora with at most proximal half black; hind tibiae sometimes narrowly to broadly infuscate medially; fore tarsi fuscous, mid and hind tarsi testaceous at base, gradually darkening to fuscous at tips. Tegulae either testaceous anteriorly, or brown to blackish. Wings hyaline, venation pale testaceous to brown. Length 1·5–2·0 mm.

♂. Antenna with scape 0·73–0·77 length of eye, reaching lower edge of median ocellus, 2·45–2·65 times as long as broad, with ventral plaque 0·4–0·5 length of scape; pedicellus plus flagellum 1·20–1·45 times breadth of mesoscutum; pedicellus 1·65–1·75 times as long as broad, very slightly longer than F1; funicle slightly stouter than pedicellus, hardly tapering distad; F1 quadrate or hardly longer than broad, 0·7–0·8 length of F2, the latter tending to be very slightly shorter than F3 and 1·5–1·7 times as long as broad, F3 and F4 each 1·7–1·9 times as long as broad; clava hardly broader than F4, slightly to distinctly longer than F3 plus F4, 3·8–4·5 times as long as broad, with C1 and C2 each 1·3–1·7 times as long as broad, C3 shorter; whorled setae as in *brachycerus*. Genitalia (Fig. 639).

Colour as in ♀.

MATERIAL EXAMINED

9 ♂, 11 ♀. **Great Britain**: 4 ♂, 4 ♀, England, Oxfordshire, Oxford Canal, on heads of *Heracleum sphondylium* going over into fruit, 12.ix.1954; 1 ♀, Radcot, 5.ix.1954; 2 ♂, 2 ♀, Buckinghamshire, Hell Coppice, near Oakley, 2.viii.1953; 2 ♂, 2 ♀, Berkshire, Wytham Wood, 10.viii.1957 (*Graham*) (BMNH); 1 ♂, 2 ♀, Lincolnshire, Brigg, reared 18.vii.1909 from seeds of *Chaerophyllum temulum* (*E. A. Woodroffe-Peacock*) (BMNH). **U.S.S.R.**: 1 ♀ (lectotype), Amurland (BMNH).

HOST. Unspecified host in seeds of *Chaerophyllum temulum* (see above).

Aprostocetus (Aprostocetus) andalusiacus sp. n.

♀. Differs from ♀ of *brachycerus* particularly in having anterior setae of scutellum only slightly behind the middle and hardly twice as far from front edge of scutellum as from posterior setae. Other small differences are as follows. Antenna with F3 slightly longer (F1 1·6 times, F2 1·45 times, F3 1·3 times as long as broad); mid lobe of mesoscutum with areoles of reticulation 3–4 times as long as broad; forewing with *M* thin, 3·65 times length of *ST*. Gaster ovate, virtually twice as long as broad, very slightly acuminate; last tergite hardly broader than long.

Body black with distinct greenish blue tint on head, thorax and gaster. Antennal scape and pedicellus black, apex of pedicellus and the flagellum brown. Legs more extensively pale than in *brachycerus*: trochanters partly yellow, also tips of femora broadly, fore and mid tibiae, bases and tips of hind tibiae broadly, and first and second segments of mid and hind tarsi (third segment brownish, fourth fuscous). Tegulae blackish. Wings hyaline, venation pale yellowish. Length 1·25 mm.

♂. Differs from ♂ of *brachycerus* in having pedicellus plus flagellum 1·6–1·9 times breadth of mesoscutum, clava 4·5–5·3 times as long as broad and nearly as long as F2 plus F3 plus F4.

Colour as ♀ but mid tibiae with brownish postmedian ring. Length 0·60–0·85 mm.

MATERIAL EXAMINED

3 ♂, 1 ♀. Holotype ♀, **Spain**: Andalucia, reared iv.1979 from galls of *Plagiotrochus* on *Quercus* sp. (*B. Nübel*) (ITZ).

Paratypes. 3 ♂, same data as holotype (MJG).

HOST. Presumably *Plagiotrochus* sp.

Aprostocetus (Aprostocetus) fusificola sp. n.

♀. Differs from ♀ of *brachycerus* in having antennal pedicellus hardly or just as long as F1 and 2·25–2·35 times as long as broad; funicular segments a little more elongate, F1 about twice, F2 1·5–1·6 times, F3 1·3–1·4 times as long as broad; clava 2·35–2·50 times as long as broad; anterior setae of scutellum 2·0–2·7 times as far from front edge as from posterior setae; dorsellum 3·0–3·5 times as broad as long; hind femora about 3 times as long as broad; spur of mid tibia 0·9 length of basitarsus; forewing with costal cell slightly shorter than *M*, 8·0–10·5 times as long as broad; *M* 3·4–4·0 times length of *ST*; gaster 1·6–2·0 times as long as broad.

Metallic tint of body rather more distinct than in *brachycerus*. Legs with trochanters, about distal half of all femora, tibiae, and tarsi except their fourth segment, yellow. Tegulae yellow. Wings hyaline, venation yellowish. Length 1·3–1·6 mm.

♂. Antenna with scape 0·8 length of eye, 2·3 times as long as broad, with ventral plaque 0·30–0·43 length of scape; pedicellus plus flagellum 1·65 times breadth of mesoscutum; pedicellus about twice as long as broad, slightly to distinctly longer than F1; funicle proximally slightly stouter than pedicellus, tapering slightly distad; F1 a little more than half as long as F2, subquadrate, following segments subequal in length, F2 1·5–1·9 times, F3 1·75–2·00 times, F4 1·75–1·85 times as long as broad; clava somewhat longer than F3 plus F4, or nearly as long as F2 plus F3 plus F4, 4·5–5·3 times as long as broad, with C1 and C2 equal in length, each 1·6–2·0 times as long as broad, C3 shorter; whorled setae long, those of F1 reaching tip of F3. Gaster oval, slightly shorter and narrower than thorax.

Colour as ♀ but gaster with a yellow subbasal transverse band; femora yellow, occasionally slightly infuscate at base.

MATERIAL EXAMINED

5 ♂, 5 ♀. Holotype ♀, **France**: Bouches du Rhône, Rognes, 22.vi.1982, reared from *Plagiotrochus fusifex* (*M. J. Gijswijt*) (ITZ).

Paratypes. 5 ♂, 4 ♀, same data as holotype (MJG).

HOST. *Plagiotrochus fusifex* Mayr.

Aprostocetus (Aprostocetus) artemisicola sp. n.

(Figs 419, 516, 650)

♀. Head slightly broader than mesoscutum; POL 1·3–1·5 OOL, OOL 2·0–2·5 times OD. Eyes 1·40–1·45 times as long as broad, separated by 1·2 times their length. Malar space about 0·6 length of eye, sulcus straight. Mouth 1·1–1·2 malar space. Antenna (Fig. 419) with scape about 0·8 length of eye, not reaching median ocellus; pedicellus plus flagellum about equal to or a little greater than breadth of mesoscutum; pedicellus fully twice as long as broad, as long as or a little longer than F1; funicle proximally hardly stouter than pedicellus but thickening slightly distad; F1 1·5–2·0 times as long as broad, F2 as long as or a little shorter than F1 and 1·4–1·5 times as long as broad, F3 at least very slightly shorter than F2 and 1·1–1·4 times as long as broad; clava slightly broader than F3, slightly to very distinctly longer than F2 plus F3, 2·0–2·3 times as long as broad, pointed, with spine about 0·35 length of C3, apical seta nearly as long as spine; sensilla sparse, uniseriate, long, decumbent with short projecting blades. Thorax about 1·3 times as long as broad; propodeal slope 60°–70°. Pronotum very short. Mid lobe of mesoscutum slightly broader than long, moderately shiny, reticultion with most areoles 3–4 times as long as broad; median line fine though distinct; 3–5 adnotaular setae on each side. Scutellum 1·4–1·5 times as broad as long, moderately strongly convex, more finely reticulate than mesoscutum; submedian lines slightly to distinctly nearer to sublateral lines than to each other, enclosing a space 1·6–1·8 times as long as broad; setae subequal, their length 0·7–0·8 distance between submedian lines, anterior pair slightly behind middle and about twice as far from front edge of scutellum as from posterior setae. Dorsellum nearly or quite 3 times as broad as long. Propodeum medially somewhat shorter than dorsellum; median carina distinct, with a small triangular basal fovea. Legs rather short and thick; hind femora 3·5–3·7 times as long as broad; spur of mid tibia 0·95 length of basitarsus, fourth tarsomere hardly shorter than basitarsus. Forewing 2·0–2·1 times as long as broad; costal cell very slightly shorter than *M*, 10–15 times as long as broad; *SM* with 3–4 dorsal setae; *M* rather thin, 3·4–3·8 times length of *ST*, its front margin with 8–13 setae; *ST* at about 50°, thin proximally and thickening only slightly distad, stigma very small and not always well-defined; *PM* absent or rudimentary; speculum small; wing beyond it thickly pilose; cilia 0·23–0·40 length of *ST*. Hindwing obtuse or slightly pointed; cilia 0·28–0·40 breadth of wing. Gaster ovate, slightly longer than head plus thorax, about as broad as thorax, 1·5–2·1 times as long as broad, acute but not or hardly acuminate; last tergite slightly to somewhat broader than long; ovipositor sheaths projecting very slightly but sometimes only their tips visible; longest seta of each cercus about twice length of next longest, kinked; tip of hypopygium at or slightly beyond half length of gaster.

Body black with a weak bluish to bluish green tint. Antennal scape and pedicellus black, tip of pedicellus sometimes brown like the flagellum. Coxae, and femora except their tips, black; tibiae mainly blackish, their bases and tips testaceous; fore tarsi fuscous, mid and hind tarsi testaceous proximally darkening to fuscous at tips. Tegulae usually blackish, sometimes a little paler anteriorly. Wings slightly tinged with grey, venation testaceous. Length 0·75–1·30 mm.

♂. Antenna (Fig. 516) with scape 0·88–0·95 length of eye, reaching lower edge of median ocellus, about 2·5 times as long as broad, with ventral plaque 0·33–0·35 length of scape; pedicellus plus flagellum 1·60–1·65 times breadth of mesoscutum; pedicellus hardly twice as long as broad, somewhat longer than F1; funicle slightly stouter than pedicellus, filiform; F1 distinctly shorter than F2 and subquadrate, following segments subequal in length, each 1·5–2·0 times as long as broad; clava about as long as F3 plus F4, 3·5–3·8 times as long as broad, with C1 and C2 distinctly longer than broad, C3 short; whorled setae moderately long, those of F1 reaching somewhat beyond tip of F2. Gaster oval, nearly as long and as broad as thorax. Genitalia (Fig. 650).

Colour as in ♀.

MATERIAL EXAMINED

18 ♂, 54 ♀. Holotype ♀, **Great Britain**: England, Middlesex, Southgate, 8.viii.1969, swept from *Artemisia vulgaris* (*Graham*) (BMNH).

Paratypes. **Great Britain**: 5 ♂, 4 ♀, Berkshire, Thatcham Reeds, near Newbury, 26.viii.1964, 5 ♂, 18 ♀, 31.viii.1964, swept from *Artemisia vulgaris* (*Graham*) (BMNH); 15 ♀, Middlesex, Southgate, 8.viii.1964, 3 ♂, 28.viii.1969, swept from *Artemisia vulgaris* (*Graham*) (BMNH); 2 ♂, 6 ♀, Surrey, White Downs, reared 5.ix.1947 from *Contarinia artemisiae* on *Artemisia vulgaris* (*M. Niblett*) (BMNH). **Italy**: 1 ♀, Sicily, Trapani, Selinunke, 30.iii.1972, on *Artemisia arborescens* (*G. Kruseman*) (MJG). **Spain**: 3 ♂, 9 ♀, Murcia, Sierra de Espuña, near Aledo, reared from galls on *Artemisia* sp., 1973 (*Bouček*) (BMNH).

HOSTS. *Contarinia artemisiae* Rübsaamen according to Niblett (unpublished) and possibly other species of Cecidomyiidae on *Artemisia* spp.

Aprostocetus (Aprostocetus) orestes sp. n.

(Fig. 373)

♀. Head as broad as or very slightly broader than mesoscutum, about 2·5 times as broad as long; POL 1·5–1·6 OOL, OOL 1·5–2·0 OD. Eyes about 1·4 times as long as broad, virtually bare. Malar space 0·62 length of eye, sulcus straight. Mouth about 1·25 malar space. Antenna (Fig. 373) with scape 0·77 length of eye, not quite reaching median ocellus; pedicellus plus flagellum slightly less than breadth of mesoscutum; pedicellus 2·3–2·4 times as long as broad, slightly longer than F1; funicle proximally distinctly stouter than pedicellus, thickening slightly distad, its segments decreasing slightly in length, F1 1·7–2·2 times, F2 1·4–1·7 times as long as broad, F3 quadrate; clava distinctly broader than F3, about twice as long as broad, slightly pointed, its segments decreasing in length, all slightly transverse, spine about 0·5 length of C3; sensilla moderately numerous, uniseriate, long, with long decumbent bases and moderately long blades. Thorax about 1·5 times as long as broad; propodeal slope about 60°. Pronotum very short. Mid lobe of mesoscutum as broad as or hardly broader than long; median line very fine; 3–4 adnotaular setae on each side. Scutellum about 1·35 times as broad as long, moderately strongly convex; submedian lines slightly nearer to sublateral lines than to each other, enclosing a space 1·9–2·5 times as long as broad; setae equal, anterior pair about 3 times as far from front edge of scutellum as from posterior setae. Dorsellum about 2·5 times as broad as long, hind edge obtusely angulate. Legs of medium length; hind femora about 4·4 times as long as broad; spur of mid tibia 0·87 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing 2·25–2·30 times as long as broad; costal cell slightly shorter than *M*, 11–12 times as long as broad; *SM* with 3–5 dorsal setae; *M* rather thick proximally, 2·85–3·50 times length of *ST*, its front edge with 10–13 setae; *ST* at about 47°, thin, stigma very small and oblong; *PM* rudimentary or a short stub; speculum rather small, extending as a narrow wedge below *M*; wing beyond moderately thickly pilose; cilia about 0·2 length of *ST*. Hindwing rounded apically; cilia 0·20–0·22 breadth of wing. Gaster sublanceolate, longer than head plus thorax, 2·2–2·5 times as long as broad, strongly acute, acuminate; last tergite about as long as broad; ovipositor sheaths projecting slightly; longest seta of each cercus about 1·6 times length of next longest, slightly kinked; tip of hypopygium at about half length of gaster.

Body black, with a slight bluish metallic tinge in places (sometimes very weak). Antennal scape and pedicellus black, tip of latter and flagellum fuscous. Coxae black, trochanters partly so; femora black with tips testaceous; rest of legs testaceous with hind tibiae black except their bases and tips, mid tibiae with broad postmedian black band; fore tarsi fuscous, mid and hind tarsi testaceous at base darkening gradually to fuscous at tips. Tegulae black. Wings subhyaline, venation brownish testaceous to brown. Length 1·8–2·2 mm.

♂. Unknown.

MATERIAL EXAMINED

4 ♀. Holotype ♀, **France**: Vaucluse, Mont Ventoux, Combe Brune, 21.viii.1983 (*Graham*) (BMNH).
Paratypes. **Czechoslovakia**: 1 ♀, Bohemia, Hradec Králové, Věkoše, 18.vii.1945 (*Bouček*) (BMNH). **France**: 2 ♀, same data as holotype (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) coccidiphagus sp. n.

(Figs 367, 520, 644)

♀. Head hardly broader than mesoscutum: POL about 1·5 OOL, OOL nearly twice OD. Eyes about 1·3 times as long as broad. Malar space 0·6 length of eye, sulcus nearly straight. Mouth slightly greater than malar space. Antenna (Fig. 367) with scape distinctly shorter than eye, not reaching median ocellus; pedicellus plus flagellum slightly greater than breadth of mesoscutum; pedicellus slightly less than twice as long as broad, a little shorter than or as long as F1; funicle proximally slightly stouter than pedicellus, filiform, its segments decreasing very slightly in length, F1 about 1·8 times, F2 1·7 times, F3 1·6 times as long as broad; clava slightly broader than F3, equal in length to F2 plus F3, 2·25 times as long as broad, with C1 and C2 subequal in length and slightly transverse, C3 shorter, spine about 0·25 length of C3, with apical seta fully as long as spine; sensilla moderately numerous, in 1 irregular row, or almost in 2 rows, on each segment, moderately long, slender, decumbent. Thorax about 1·5 times as long as broad; propodeal slope 50°. Pronotum very short. Mid lobe of mesoscutum as long as or slightly longer than broad, moderately convex, moderately shiny, with extremely fine but fairly sharply engraved reticulation, with areoles about 3 times as long as broad over anterior half but 1·5–2·0 times over posterior half; median line fine and weak; 4–5 adnotaular setae on each side. Scutellum 1·2–1·3 times as broad as long, moderately convex, more finely reticulate than mesoscutum with areoles averaging 3–4 times as long as broad; submedian lines very slightly nearer to sublateral lines than to each other, enclosing a space about 2·5 times as long as broad; setae equal, their length about equal to distance between submedian lines, anterior pair very slightly behind middle. Dorsellum 2·7 times as broad as long, hind edge obtusely angulate. Propodeum about as long as dorsellum, shiny, with fine weak reticulation; median carina with fovea at front end, expanding in posterior half; callus with 3–4 setae. Legs of medium length and thickness; hind femora about 4·5 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere about 0·6 length of basitarsus. Forewing about 2·2 times as long as broad; costal cell very slightly shorter than *M*, 9·0–9·5 times as long as broad; *SM* with 4 dorsal setae; *M* rather thin, about 3·1 times length of *ST*, its front edge with about 14 setae; *ST* at 47°, rather thin, stigma relatively small; *PM* rudimentary; speculum small, not extending below *M*; wing beyond it moderately thickly pilose, quite thickly distad; cilia about 0·25 length of *ST*. Hindwing obtuse; cilia 0·2 breadth of wing. Gaster long-ovate, a little longer than head plus thorax, hardly as broad as thorax, fully twice as long as broad, acute but hardly acuminate; last tergite about as long as broad; ovipositor sheaths very slightly projecting; longest seta of each cercus 1·7–1·8 times length of next longest; tip of hypopygium at about half length of gaster.

Black, with a weak bluish tint on head and thorax, chiefly on dorsal surface; gaster slightly tinged with bluish and bronze. Antennal scape testaceous beneath, pedicellus testaceous beneath and at tip; anelli testaceous. Coxae coloured like body; femora more or less infuscate; legs otherwise testaceous with hind tibiae slightly brownish before middle, tips of tarsi brown. Tegulae testaceous anteriorly. Wings subhyaline, venation brownish testaceous. Length 1·7 mm.

♂. Antenna (Fig. 520) with scape slightly shorter than eye, 2·4–2·8 times as long as broad, with ventral plaque 0·4–0·5 length of scape; pedicellus plus flagellum about 1·4 times breadth of mesoscutum; pedicellus 1·6–1·8 times as long as broad, slightly longer than F1; funicle slightly stouter than pedicellus, filiform; F1 about 0·6 length of F2, subquadrate, following segments subequal or increasing very slightly in length, F2 1·8–2·0 times, F4 1·9–2·5 times as long as broad; clava hardly broader than F4, nearly or just as long as F3 plus F4, 4·1–4·6 times as long as broad, with C1 1·6–1·8 times as long as broad, C2 slightly shorter, C3 much shorter; whorled setae long, those of F1 reaching nearly to tip of F3. Genitalia (Fig. 644).

Colour as in ♀.

MATERIAL EXAMINED

4 ♂, 1 ♀. Holotype ♀, **Great Britain**: Berkshire, Wytham Wood, reared 26.iv.1974 from *Kermes quercus* (L.) on *Quercus robur* (*G. C. Varley*) (BMNH).

Paratypes. **Great Britain**: 2 ♂, same data as holotype, 2 ♂, same locality and host, 18.v.1974 (*G. C. Varley*) (BMNH).

HOST. *Kermes quercus* (L.).

Aprostocetus (Aprostocetus) ceroplastae (Girault) comb. n.

(Figs 368, 372)

Neomphaloidella ceroplastae Girault, 1916: 100–101. LECTOTYPE ♀, UGANDA: Kampala (*Gowdey*) (USNM), here designated [examined].

In his description of *ceroplastae* Girault stated (1916: 101) '*Types* – Catalogue *No. 19914*, U.S.N.M., three females on tags, one male and two females head on a slide'. The syntypes were loaned to me: one female with both antennae complete has been labelled at some time as holotype although Girault did not indicate in his description which specimen was intended, if indeed he selected one. As no validation of a type-specimen appears to have been published subsequently, the ♀ labelled as holotype is formally designated lectotype. It is mounted on a card-point (tag).

Domenichini (1966*a*: 182) synonymized *Tetrastichus toddaliae* Risbec with *T. ceroplastae* (Girault) although he had not examined the syntypes of either species. He gave a redescription of *ceroplastae* (1966*a*: 182–184) which, however, applies rather to *toddaliae*.

♀. The differences between this and ♀ *toddaliae*, as deduced from their respective syntypes, are given in couplet 144 of the key to females. The best distinction seems to be the different relative lengths of the segments in the ♀ antennal clava (Fig. 368); in *ceroplastae* C1 occupies nearly half the total length of the clava, which agrees with Girault's statement (1916: 101) 'club 1 . . . half the length of the club . . .'. Forewing (Fig. 372).

♂. From the single available ♂ it is not possible to find clear distinctions between it and the ♂ of *toddaliae*.

MATERIAL EXAMINED

1 ♂, 5 ♀ (syntypes). **Uganda**.

HOST. *Ceroplastes galeatus* Newstead.

COMMENTS. Domenichini (1966*a*: 182) recorded *ceroplastae* from France, Israel, Italy, Libya and Turkey, but the records from Israel and Turkey actually refer to *toddaliae*, possibly also some or all of his other records.

Several other, apparently valid, species belong to the subgroup of *ceroplastae*, for example *Aprostocetus purpureus* (Cameron) **comb. n.**, *A. gowdeyi* (Crawford) **comb. n.**, *A. stictococci* (Silvestri) **comb. n.**, *A. sicarius* (Silvestri) **comb. n.**, and *A. gravans* (Silvestri) **comb. n.**

Aprostocetus (Aprostocetus) toddaliae (Risbec) comb. n.

(Figs 369, 514, 646)

Tetrastichus sp.; Silvestri & Martelli, 1908: 349–350.

Tetrastichus toddaliae Risbec, 1958: 64–65. LECTOTYPE ♀, MADAGASCAR: Tananarive (MNHN), here designated [examined].

[*Tetrastichus gibbus* Benassy & Biliotti, 1963: 214–216. Nomen nudum.]

[*Tetrastichus ceroplastae* (Girault); Domenichini, 1966*a*: 182–184; 1966*b*: 23. Misidentification.]

Risbec stated that his Madagascan material was housed in the Institut Scientifique de Madagascar, Tsimbazaza, Tananarive. He also mentioned that paratypes had been deposited in MRAC, Tervuren. I could not locate the latter. I examined two females mounted on a slide in MNHN, Paris, labelled 'Tetrastichus toddaliae Risbec ex cochen. Ceroplas. toddalia Tananarive Madagascar R.P. [R. Paulian]'. These are certainly syntypes. One of them is here designated lectotype of *Tetrastichus toddaliae*; its head has become detached from the body and lies on the edge of the slide.

Risbec's description is quite good although his figure 4b of the antenna is not particularly so. He stated (1958: 64) that the antennal clava of the ♀ had the ratio of the lengths of its three segments as 2 : 2 : 1, which agrees with the material examined.

♀. Differs from ♀ of *ceroplastae* in the characters given in the key to females, couplet 144. Antenna (Fig. 369). The gaster varies from slightly shorter, to slightly longer, than the thorax; its apex is less acute than in *ceroplastae*, or forms nearly a right angle. The forewing has 4–7 dorsal setae on *SM*; the wing beyond the speculum is more thickly pilose with the pilosity coming up close to *M*, whilst there are no (or indistinct) bare spots above and beyond *ST*.

♂. For characters see couplet 80 of key to males. Antenna (Fig. 514). Genitalia (Fig. 646).

MATERIAL EXAMINED

Several ♂, ♀. **Israel**, **Madagascar**, **Turkey**.

HOSTS. *Ceroplastes* spp.

Aprostocetus (Aprostocetus) invidus (Domenichini) **comb. n.**

(Fig. 530)

Tetrastichus invidus Domenichini, 1966*a*: 157; 1966*b*: 36. Holotype ♀, SYRIA: 10.iii.1964 (*Elaut*) (MHN) [examined].

A full description of both sexes of this extralimital species was given by Domenichini (1966*a*: 157–158). I have included the male in my key to species, though not the female as the antennae of the only specimen available to me (the holotype) were broken off.

MATERIAL EXAMINED

1 ♂, 1 ♀ (holotype). **Syria**. Domenichini (1966*b*: 36) also recorded the species from **Italy** and **Cyprus**.

HOST. *Prolasioptera berlesiana* Paoli on olive.

Aprostocetus (Aprostocetus) phineus (Walker) **comb. rev.**

(Figs 379, 383, 385, 508, 636)

Cirrospilus Phineus Walker, 1839*a*: 303. Lectotype ♀, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 58) [examined].
Aprostocetus phineus (Walker) Graham, 1961*b*: 58.
Tetrastichus phineus (Walker) Domenichini, 1966*a*: 170; 1966*b*: 44.

♀. Head 1·15–1·27 times as broad as mesoscutum, 2·3–2·4 times as broad as long; POL 1·05–1·40 OOL, OOL about 2·5 OD. Eyes 1·20–1·25 times as long as broad. Malar space about 0·55 length of eye, sulcus straight or nearly so. Mouth 1·3–1·4 malar space. Antenna (Fig. 383) with toruli situated slightly above ventral edge of eyes; scape 0·75–0·80 length of eye, not quite reaching median ocellus; pedicellus plus flagellum 1·10–1·25 times breadth of mesoscutum; pedicellus 2·1–2·7 times as long as broad, as long as or slightly longer than F1; funicle proximally not stouter than pedicellus, thickening at most very slightly distad, its segments decreasing very slightly in length or subequal, F1 2·0–2·5 times, F2 1·9–2·2 times, F3 1·7–1·9 times as long as broad; clava very slightly broader than F3, nearly or just equal in length to F2 plus F3, 2·5–3·0 times as long as broad, acute, with C1 and C2 about equal in length and about as long as broad, C3 shorter, spine about 0·5 length of C3 with apical seta about half as long as spine; sensilla somewhat sparse in small ♀, moderately numerous in large ♀, in one (sometimes irregular) row on each segment, long and slender, with moderately long bases and rather long outstanding blades. Thorax about 1·5 times as long as broad; propodeal slope 35°–40° (Fig. 379). Pronotum 0·25–0·33 length of mesoscutum. Mid lobe of mesoscutum slightly broader than long, moderately convex, sculptured as in *lycidas*; median line evanescent, usually visible in certain lights but extremely fine, sometimes virtually absent; (2–) 3–5 adnotaular setae on each side. Scutellum 1·3–1·4 times as broad as long, rather weakly convex in longitudinal axis, reticulation with shorter areoles than that of mesoscutum, most 2–3 times as long as broad, in posterior part of sclerite not or hardly longer than broad; submedian lines tending to be very slightly nearer to sublateral lines than to each other, enclosing a space 1·9–2·2 times as long as broad; setae rather weak, length of anterior pair 0·65–0·70 distance between submedian lines, posterior pair tending to be slightly longer; anterior pair in, or even very slightly before, the middle. Dorsellum 2·5–3·0 times as broad as long. Propodeum medially as long as or a little shorter than dorsellum, shiny, with fine, superficial reticulation; other features much as in *lycidas*. Legs somewhat short and stout; hind femora 3·5–3·7 times as long as broad; spur of mid tibia as long as basitarsus, fourth segment slightly shorter than basitarsus. Forewing (Fig. 385) 2·10–2·35 times as long as broad; costal cell slightly shorter than or just as long as *M*, 10–11 times as long as broad; *SM* with (2–) 3–4 dorsal setae; *M* moderately thick proximally but tapering to near apex, 3·1–4·0 times length of *ST*; its front edge with 9–12 setae; *ST* at 40°–45°, very thin proximally but gradually expanding, stigma small and oblong; *PM* a short tapering stub or absent; speculum very small or rudimentary, not extending below *M*; wing beyond it rather densely pilose, especially distad; cilia 0·25–0·40 length of *ST*. Hindwing obtuse or slightly pointed; cilia 0·27–0·33 breadth of wing. Gaster ovate, as long as or slightly longer than head plus thorax, as broad as or slightly broader than thorax, 1·4–2·1 times as long as broad, not or hardly acuminate; last tergite usually broader than long, occasionally nearly as long as broad; ovipositor sheaths at most projecting very slightly, sometimes invisible from above; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium slightly beyond half length of gaster.

Black, usually non-metallic (occasionally a very faint bluish tinge on head and dorsum of thorax); upper angle of mesopleuron yellowish; mouth-edge sometimes reddish to testaceous; dorsellum partly to wholly testaceous in continental ♀, some of which also have prosternum and sides of pronotum and occasionally other parts, testaceous; base of gaster sometimes more or less reddish to testaceous beneath, in some continental ♀ also above, occasionally as much as proximal half pale. Antennal scape fuscous to testaceous; tip and lower surface, or whole, of pedicellus pale; flagellum testaceous, brownish or fuscous. Coxae black, or partly testaceous, in southern ♀ sometimes wholly so; legs otherwise usually testaceous with pretarsi brownish, femora sometimes reddish medially, in dark British forms more or less infuscate. Tegulae yellowish to testaceous. Wings subhyaline or slightly yellowish, venation testaceous. Length 1·2–1·9 mm.

♂. Antenna (Fig. 508) with scape nearly as long as eye, reaching median ocellus, 2·7–3·0 times as long as broad, with ventral plaque 0·28–0·30 length of scape; pedicellus plus flagellum 2·0–2·2 times breadth of mesoscutum; pedicellus 2·0–2·3 times as long as broad, as long as or slightly longer than F1; funicle proximally only as stout as pedicellus, tending to taper very slightly distad; F1 somewhat shorter than F2, 1·7–2·2 times as long as broad, following segments subequal in length, F2 2·2–2·7 times, F3 2·5–2·8 times, F4 2·6–2·9 times as long as broad; clava barely as broad as F4, somewhat longer than F3 plus F4, about 7 times as long as broad, with C1 and C2 each about twice as long as broad, C3 shorter; whorled setae moderately long, those of F1 reaching nearly to tip of F3. Gaster oval, about as long as thorax, as broad as or slightly narrower than thorax. Genitalia (Fig. 636).

Colour as in ♀ (but forms with pale-marked body not known).

MATERIAL EXAMINED

7 ♂, 38 ♀. **Czechoslovakia**, **Denmark**, **France**, **Great Britain**, **Yugoslavia**, **U.S.S.R.**

HOST. Unknown.

COMMENT. This species occurs principally in dry, grassy habitats.

Aprostocetus (Aprostocetus) brevipennis sp. n.

(Figs 186, 187)

♀. Differs from ♀ of *phineus* in having forewings (Fig. 186) much shortened, reaching only slightly beyond base of gaster, with abnormal venation; antenna (Fig. 187) with funicle distinctly stouter than pedicellus, its segments slightly shorter, F1 1·7–1·9 times, F2 1·55–1·80 times, F3 1·4–1·8 times as long as broad; clava 2·90–3·25 times as long as broad, with spine about 0·66 length of C3; head 1·28–1·30 times as broad as mesoscutum; gaster on average rather longer, 1·70–2·35 times as long as broad and 1·7–1·9 times length of head plus thorax.

Body black, non-metallic; mouth-edge narrowly testaceous. Antenna brown with scape beneath, and pedicellus at apex, testaceous. Coxae black, fore coxae sometimes testaceous distally; legs otherwise testaceous with fourth tarsomere and pretarsus of all legs brownish. Length 1·4–1·8 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Czechoslovakia**: Moravia merid., vi.1940, swept from psammophil vegetation in 'Moravian Sahara' near Bzenec (*A. Hoffer*) (BMNH).

Paratypes. **Czechoslovakia**: 2 ♀, Kamenica nad Hronom, 19.v.1960 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) debilitatus sp. n.

(Fig. 384)

♀. Differs from ♀ of *phineus* in the characters given in the key to females, couplet 136. Other features are as follows. Eyes 1·3 times as long as broad. Malar sulcus with a very small narrow fovea below eye. Antenna (Fig. 384) with pedicellus 2·5 times as long as broad, as long as F1; funicular segments decreasing in length; clava distinctly broader than F3, about 2·25 times as long as broad, spine about 0·33 length of C3, with apical seta as long as spine. Thorax weakly arched, propodeal slope about 30°. Mid lobe of mesoscutum about 1·4 times as broad as long, weakly convex; median line traceable over posterior half; 2 short and weak adnotaular setae on each side; areoles of reticulation mostly 1·5–2·0 times as long as broad. Forewing about 2·6 times as long as broad but reaching only to tip of gaster; costal cell a little longer than *M*, about 16 times as long as broad; *SM* with 3 dorsal setae; *M* somewhat thicker than in *phineus*, 3 times length of *ST*; *ST* at 35°, slightly curved. Gaster oblong-elliptic, about 1·35 times length of head plus thorax, 2·5 times as long as broad.

Body yellowish testaceous, with black or fuscous markings as follows: ocellar triangle, greater part of occipital surface, pronotum medioposteriorly and a spot around each spiracle, a double spot on front part of mid lobe of mesoscutum, a spot on the anterior part of each scapula, another anteriorly on each axilla; scutellum between submedian lines and posteriorly; sides of metanotum; propodeum; sides of gaster, ovipositor sheaths; upper part of mesopleuron, metapleuron, and dorsum of gaster infuscate. Antennal scape and pedicellus yellowish, the latter infuscate dorsally; flagellum fuscous. Legs, except bases of hind coxae, yellow. Tegulae yellow. Wings slightly yellowish tinged, venation yellowish. Length 1·65 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **France**: Vaucluse, near Gordes, 26.vii.1975 (*Graham*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) doksyensis sp. n.

(Fig. 208)

♀. Differs from ♀ of *phineus* in the following characters. Malar sulcus slightly curved. Antenna (Fig. 208) with pedicellus 2·6–2·9 times as long as broad, slightly to distinctly longer than F1; funicular segments decreasing rapidly in length, F1 1·7–2·1 times, F2 1·5–1·6 times, F3 1·20–1·35 times as long as broad; clava 2·1–2·5 times as long as broad, equal in length to F2 plus F3. Propodeal slope only about 20°. Mid line of mesoscutum absent. Scutellum in profile almost flat. Mesoscutum and scutellum with areoles of reticulation on average shorter, most 1·5–2·0 times as long as broad. Forewing narrower, 2·45–2·60 times as long as broad; *M* 3·75–4·40 times length of *ST*; *PM* nearly half length of *ST*; cilia 0·45–0·65 length of *ST*. Gaster sublanceolate, 2·0–2·5 times as long as broad, slightly acuminate; last tergite about as long as broad; ovipositor sheaths projecting only very slightly; tip of hypopygium at about half length of gaster.

Differs from ♀ of *debilitatus* in the characters given in the key to females, couplet 18.

Body black, with a very weak bluish tinge on head and thorax (more distinct in one paratype); upper angle of mesopleuron testaceous. Antennae, legs, tegulae and wings coloured as in *phineus*. Length 1·25–1·70 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Doksy, Břehyně, 30.vi.1957 (*Bouček*) (BMNH).

Paratypes. **Czechoslovakia**: 1 ♀, same data as holotype; 1 ♀, same locality, 17.vii.1963 (*Bouček*) (BMNH).

HOST. Unknown.

COMMENT. This species resembles some members of the *fulvipes*-complex in its flattened thorax but has narrowly triangular scapular flanges more like those of *phineus*, to which it appears to be more nearly related. Like *phineus* it also has the anterior setae of the scutellum placed in the middle of the length of the sclerite and distinctly nearer to the submedian lines than to the sublateral lines.

Aprostocetus (Aprostocetus) esherensis sp. n.

(Fig. 209)

♀. Differs from ♀ of *doksyensis* particularly in having submedian lines of scutellum weak, setae subequal in length, the anterior pair slightly behind the middle, twice as far from front edge of scutellum as from posterior setae, and equidistant from submedian and sublateral lines. It also differs in having the antenna (Fig. 209) with pedicellus only twice as long as broad, F1 relatively shorter (F1 1·5 times, F2 1·2 times, F3 1·35 times as long as broad); clava 2·5 times as long as broad; sculpture of mesoscutum more delicately engraved; gaster relatively shorter, 1·7 times as long as broad.

Body black, non-metallic with mouth-edge narrowly and sutures of face testaceous. Length 1·45 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Great Britain**: England, Surrey, Esher Common, 11.vii.1971 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) bouceki sp. n.

(Fig. 210)

♀. Differs from ♀ of *esherensis* chiefly in the characters noted in the key to females, couplet 19. Antenna (Fig. 210) with pedicellus plus flagellum nearly 1·2 times breadth of mesoscutum; pedicellus 1·2 times as long as F1; F1 1·8 times, F2 1·2 times as long as broad, F3 very slightly transverse; clava slightly longer than F2 plus F3 and 1·8 times as long as broad. Pronotum conical, 0·6 as long as mesoscutum. Mid lobe of mesoscutum with 2 adnotaular setae on each side. Propodeum medially slightly longer than dorsellum.

Colour: see couplet 19 of key to females. Length 1·3 mm.

♂. Unknown.

MATERIAL EXAMINED

1 ♀. Holotype ♀, **Spain**: Castellón, Benicassim, 13.v.–15.vi.1973 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) calamarius Graham **comb. rev.**

(Figs 191–194, 487, 652, 726)

[*Melittobia* osmiae Thomson; Erdös, 1955: 45. Misidentification.]

Aprostocetus calamarius Graham, 1961*a*: 35–37. Holotype ♀, SWEDEN: Skåne, Yddingen, 10.viii.1959, swept from *Phragmites australis* (*Graham*) (UM) [examined].

Tetrastichus calamarius (Graham) Domenichini, 1966*a*: 177; 1966*b*: 21; Erdös, 1971: 235–236; Kostjukov, 1978*b*: 454.

For a full description of both sexes see Graham (1961*a*).

♀. Head (Fig. 191), antenna (Fig. 192), anelli (Fig. 726), forewing (Fig. 193), thorax (Fig. 194).

♂. Antenna (Fig. 487). Genitalia (Fig. 652).

MATERIAL EXAMINED

7 ♂, many ♀. **Hungary, Ireland, Italy, Netherlands, Sweden**.

Hosts. *Giraudiella inclusa* (Frauenfeld) and *Lasioptera arundinis* (Schiner) on *Phragmites australis*.

Comments. Although I originally placed *calamarius* in the *fulvipes*-group, it differs in several respects from other members of that complex and in fact appears to be rather isolated.

The courtship behaviour and mating of *calamarius* have been described by Van den Assem *et al.* (1982*a*: 210, fig. 7).

Aprostocetus (Aprostocetus) fulvipes (Förster) **comb. rev.**

(Figs 195–198, 279, 490, 657, 724)

Syntomosphyrum fulvipes Förster, 1878: 60. Syntypes ♀, Germany (? lost). NEOTYPE ♀, Czechoslovakia: Praha-Ruzyně, 11.vii.1952 (*Bouček*) (BMNH), here designated [examined].
Tetrastichus astichus Thomson, 1878: 297. Lectotype ♀, Sweden: Öland (ZI), designated by Graham (1961*b*: 61) [examined]. **Syn. n.**
Aprostocetus fulvipes (Förster) Graham, 1961*b*: 61.
Aprostocetus astichus (Thomson) Graham, 1961*b*: 61.
Tetrastichus fulvipes (Förster) Domenichini, 1966*a*: 177; 1966*b*: 32.

The original material of *fulvipes* has not been found, although it has been looked for in the institutions mentioned by Graham (1961*b*: 61). In order to define the species objectively I have designated a neotype (which was independently determined as *fulvipes* by Bouček). Förster's description applies in the main both to the present species and to *calamarius* Graham. However, he described the antennae as black with the scape reddish yellow, which best fits the present species, as *calamarius* has the flagellum testaceous or pale brownish.

The lectotype of *astichus* Thomson lacks the head, which may have been lost before Thomson described the specimen, as he made no mention of the ♀ antennae. The anterior setae of the scutellum are unusually placed in the lectotype but I have females of *fulvipes* which otherwise completely resemble it, hence I regard it as a slightly aberrant *fulvipes*.

♀. Head (Fig. 197) at least slightly broader than mesoscutum, more noticeably in some brachypterous specimens in which it may be up to 1·4 times as broad, 2·2–2·5 times as broad as long; POL 0·8–1·0 OOL, OOL 3·0–3·5 OD. Frons, slightly in front of median ocellus, with a fork formed by two impressed lines which meet in an obtuse angle at upper end of scrobal area. Eyes about 1·3 times as long as broad, separated by 1·3 times their length, moderately thickly clothed with setae whose length is at least 0·66 OD. Malar space 0·55–0·63 length of eye, sulcus nearly straight. Mouth 1·45 malar space. Head with numerous long setae, those of vertex dark, their length about twice OD. Antenna (Fig. 195) with scape 0·85–0·90 length of eye, just reaching median ocellus; pedicellus plus flagellum 1·25–1·30 breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad, distinctly longer than F1, with numerous setae; anelli (Fig. 724); funicle proximally much stouter than pedicellus, thickening somewhat distad, its segments subequal in length, or F3 slightly shorter than the others; F1 slightly longer than broad, F2 subquadrate to slightly transverse, F3 slightly transverse; clava broader than F3, as long as or slightly longer than F2 plus F3, 1·8–2·0 times as long as broad, obtuse, with C1 and C2 somewhat transverse, C3 very short, spine moderately long, with apical seta about as long as spine; sensilla moderately numerous, nearly as long as the segments, subdecumbent; flagellum with conspicuous stiff setae. Thorax about 1·5 times as long as broad, broader than high; propodeal slope 12°–18°. Pronotum subconical, 0·55–0·60 as long as mesoscutum, with a row of long setae near hind margin. Mid lobe of mesoscutum (Fig. 279) 1·4–1·6 times as broad as long, weakly convex, moderately shiny, with extremely fine engraved reticulation having most areoles about twice as long as broad; median line absent; (2–) 3–4 long suberect adnotaular setae on each side. Scapulae not deeply emarginate, flanges triangular. Scutellum 0·75 as long as mesoscutum, 1·35–1·50 times as broad as long, nearly flat in profile, reticulation less fine than on mesoscutum and with most discal areoles at most slightly longer than broad; submedian lines absent; setae subequal, long, anterior pair normally in or slightly before middle, rarely very slightly behind middle. Dorsellum 2·6–3·0 times as broad as long. Propodeum with sides nearly parallel, hind corners nearly rectangular, rather less shiny than scutellum, as long as or very slightly longer than dorsellum; spiracles short-oval, separated by about half their length from metanotum. Legs rather short, moderately stout; hind femora about 3·5 times as long as broad; spur of mid tibia slightly shorter than basitarsus; tarsi rather thick, with short segments, mid and hind tarsi (not counting pretarsus) hardly more than half as long as their tibiae, fourth tarsomere nearly as long as basitarsus. Wings variable, both macropterous and brachypterous forms occurring. Macropters with forewing (Fig. 198) 2·5–3·0 times as long as broad, reaching slightly beyond tip of gaster; brachypters with forewings not reaching tip of gaster and sometimes hardly to half its length, becoming also very narrow, up to 4 times as long as broad. Macropters with costal cell (Fig. 198) distinctly shorter than *M*, 12·0–13·5 times as long as broad; *SM* with 3–4 dorsal setae; a decolourized break usually present separating parastigma from *M*; *M* thick at base but tapering, 4·0–4·5 times length of *ST*, its front edge with 10–13 setae; *ST* at 40°, thin proximally but expanding distad, stigma moderate-sized but poorly defined; *PM* absent or a short stub; speculum very small or rudimentary; wing beyond it densely pilose; subcubital line of setae ending somewhat distad of speculum; cilia 0·5–0·75 length of *ST*. Hindwing obtuse or bluntly pointed; cilia 0·33–0·45 breadth of wing. Petiole very strongly transverse. Gaster long-ovate to sublanceolate, distinctly longer than head plus thorax, at least as broad as thorax, 1·8–2·6 times as long as broad, acuminate; last tergite (Fig. 196) as long as or slightly longer than broad; ovipositor sheaths distinctly exserted, sheaths plus postcercale 0·3–0·6 length of hind tibia; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at about half length of gaster.

Body black, non-metallic; mouth-edge sometimes narrowly testaceous; gaster sometimes testaceous beneath in southern forms, sides of pronotum testaceous in one ♀. Antennal scape testaceous, occasionally infuscate dorsally; pedicellus and flagellum black, pedicellus sometimes pale beneath and at tip. Legs usually testaceous with fore and mid coxae sometimes infuscate proximally, hind coxae often mainly to wholly black; sometimes some or all femora more or less infuscate proximally; tips of tarsi brownish. Some (especially southern) forms have legs wholly pale. Tegulae testaceous, sometimes brownish posteriorly. Wings subhyaline or faintly yellowish, venation testaceous to brown, distal part of parastigma and proximal part of *ST* sometimes paler. Length 1·3–2·2 mm.

♂. Antenna (Fig. 490) with scape distinctly longer than eye, reaching distinctly above vertex, 2·3–2·5 times as long as broad, with ventral plaque 0·6–0·7 length of scape; pedicellus plus flagellum 1·6–1·7 times breadth of mesoscutum; pedicellus about twice as long as broad, slightly longer than F1; funicle proximally somewhat stouter than pedicellus, tending to taper very slightly distad, its segments subequal in length or with F1 slightly shorter; F1 quadrate or nearly so, following segments each 1·2–1·6 times as long as broad; clava hardly as broad as F4, about as long as F3 plus F4, 3 times as long as broad, with C1 and C2 slightly longer than broad; whorled setae long, those of F1 reaching tip of F3. Only macropters known; forewing about 2·5 times as long as broad. Genitalia (Fig. 657).

Colour as in ♀.

MATERIAL EXAMINED

19 ♂, 40 ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Italy**, **Sweden**.

HOST. Unknown.

COMMENT. This species occurs locally in damp meadows and marshes, often where *Phalaris* and *Phragmites* are present.

Aprostocetus (Aprostocetus) apama (Walker) **comb. rev.**

(Figs 203–206, 489, 658, 725)

Cirrospilus Apama Walker, 1839*a*: 310. Lectotype ♀, GREAT BRITAIN: Cumberland (BMNH), designated by Graham (1961*b*: 60) [examined].

Tetrastichus facialis Thomson, 1878: 297. Lectotype ♀, SWEDEN: Lund (ZI), designated by Graham (1961*b*: 60) [examined]. [Synonymized by Graham, 1961*b*: 60.]

Aprostocetus apama (Walker) Graham, 1961*b*: 60.

Tetrastichus apama (Walker) Domenichini, 1966*a*: 177; 1966*b*: 18.

♀. Head distinctly broader than mesoscutum, 2·1–2·2 times as broad as long; POL hardly or very slightly greater than OOL, OOL about 2·5 OD. Eyes 1·20–1·25 times as long as broad, separated by about 1·5 times their length. Malar space about 0·7 length of eye. Antenna (Fig. 204) with scape slightly longer than eye, reaching distinctly above vertex; pedicellus plus flagellum 1·3–1·5 times breadth of mesoscutum; pedicellus 2·3–2·7 times as long as broad, slightly longer than F1; anelli (Fig. 725); funicle proximally as stout as or slightly stouter than pedicellus, thickening very slightly distad, its segments decreasing slightly in length, F1 1·7–2·0 times, F2 about 1·5 times, F3 1·0–1·4 times as long as broad; clava slightly broader than F3, nearly or just as long as F2 plus F3, 2·1–2·3 times as long as broad, obtuse or bluntly pointed, with C1 and C2 each about as long as broad, C3 very short, apical seta of spine slightly longer than spine; sensilla less numerous, and shorter, than in *fulvipes*. Thorax (Fig. 205) about 1·6 times as long as broad. Pronotum

0·40–0·45 length of mesoscutum. Mid lobe of mesoscutum with 2–4 adnotaular setae on each side. Scutellum with submedian lines absent or weakly indicated (in the latter case slightly nearer to sublateral lines than to each other); anterior pair of setae nearly always distinctly before, only occasionally in the middle. Only macropters known: forewing (Fig. 206) 2·7–3·0 times as long as broad; *SM* with 4–6 dorsal setae; *M* 4·7–5·5 times length of *ST*, its front edge with 11–15 setae; decolourized break between parastigma and base of *M* tending to be indistinct; subcubital line of setae reaching level of basal vein. Legs longer and more slender than in *fulvipes*, especially tibiae and tarsi; spur of mid tibia about 0·75 length of basitarsus; mid and hind tarsi with longer segments. Gaster usually 2·5–4·0 times as long as broad (rarely a little less than twice if abnormally flattened); last tergite (Fig. 203) 1·0–1·5 times as long as broad; ovipositor sheaths plus postcercale 0·45–0·65 length of hind tibia. Other features as in *fulvipes*.

Colour as in *fulvipes* but scape sometimes more or less infuscate dorsally, pedicellus and flagellum sometimes pale beneath; fore and mid coxae sometimes wholly testaceous, hind coxae sometimes testaceous with only base dark. Length 1·90–2·15 mm.

♂. Antenna (Fig. 489) with scape longer than eye, reaching far above vertex, about 3·5 times as long as broad, with ventral plaque about 0·4 length of scape; pedicellus plus flagellum nearly 3 times breadth of mesoscutum; pedicellus about 2·7 times as long as broad, shorter than F1, with numerous setae; funicle extremely slender, proximally hardly stouter than pedicellus, tapering very slightly distad; each funicular segment, and C1, swollen or nodulose basally and tapering to apex; funicular segments subequal in length, F1 about 3·5 times, following segments about 4 times, as long as broad; clava somewhat longer than F3 plus F4, about 10 times as long as broad, with C1 and C2 subequal, each about 3·5 times as long as broad, C3 much shorter; whorled setae long, those of F1 reaching about middle of F3. Genitalia (Fig. 658).

Colour as in ♀.

MATERIAL EXAMINED

1 ♂, 18 ♀. **Czechoslovakia**, **Great Britain**, **Sweden**, **U.S.S.R.**, **Yugoslavia**.

HOST. Reared from the gall of some species of Cecidomyiidae (Diptera) on *Carex* stem base: 1 ♂, 2 ♀, Great Britain, England, Hampshire, Leckford Abbas, 28.xi.1971 (*P. J. Chandler*) (RRA).

Aprostocetus (Aprostocetus) prolidice sp. n.

(Fig. 202)

♀. Differs from ♀ of *apama* in the characters given in the key to females, couplet 12. Antenna (Fig. 202) with pedicellus as long as or somewhat longer than F1; F1 2·0–2·6 times, F2 1·6–1·7 times, F3 1·1–1·5 times as long as broad. Length 2·2–2·4 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Czechoslovakia**: Bohemia, Týniště nad Orlicí, 28.v.1944 (*Bouček*) (BMNH).

Paratypes. **Czechoslovakia**: 2 ♀, same locality as holotype, 28.v.1944, 24.ix.1944 (*Bouček*) (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) planiusculus (Thomson) comb. rev.

(Figs 200, 201, 491)

Tetrastichus planiusculus Thomson, 1878: 297; Domenichini, 1966*a*: 177; 1966*b*: 45. Lectotype ♀, SWEDEN: Ortofta (ZI), designated by Graham (1961*b*: 61) [examined].

Aprostocetus planiusculus (Thomson) Graham, 1961*b*: 61.

♀. Differs from ♀ of *apama* in having eyes slightly larger, separated by about 1·3 times their length, their setae tending to be a little shorter; setae of head much shorter, length of those on vertex not greater than OD; frons, immediately in front of median ocellus, with a transverse, straight to slightly curved ridge or line; malar space about 0·55 length of eye; antenna (Fig. 201) with scape slightly shorter than eye, not nearly reaching median ocellus; pedicellus plus flagellum not or hardly greater than breadth of mesoscutum; pedicellus 2·0–2·2 times as long as broad; funicular segments relatively shorter, F1 1·2–1·5 times, F2

1·3–1·7 times, F3 1·0–1·2 times as long as broad; pronotum usually 0·25–0·33 length of mesoscutum, rarely more; adnotaular and scutellar setae relatively shorter; reticulation of scutellum finer, with most areoles twice or more than twice as long as broad; propodeum medially usually not quite as long as dorsellum; forewing 2·55–2·70 times as long as broad, with subcubital line of setae reaching basad at most to level of distal edge of speculum; gaster, including ovipositor sheaths, 2·4–2·6 times as long as broad; ovipositor sheaths plus postcercale 0·57–0·65 length of hind tibia. Submedian lines of scutellum sometimes absent, sometimes present but weak. Thorax in profile (Fig. 200).

Head and thorax often with a faint bluish tinge.

♂. Antenna (Fig. 491) with scape about 3 times as long as broad, with ventral plaque about 0·55 length of scape; pedicellus plus flagellum about twice breadth of mesoscutum; pedicellus slightly more than twice as long as broad, as long as or slightly longer than F1; flagellum less slender than in *apama*: F1 distinctly shorter than F2 and 1·7–2·2 times as long as broad, following segments each about 3 times as long as broad; clava 7·0–7·5 times as long as broad, with C1 and C2 each 1·7–3·0 times as long as broad. Setae of eyes tending to be slightly shorter than in *apama* but sometimes their length 0·66 OD. POL very slightly greater than OOL.

MATERIAL EXAMINED

7 ♂, 7 ♀. **Czechoslovakia, Great Britain, Sweden**.

HOST. Unknown.

Aprostocetus (Aprostocetus) durmitorensis sp. n.

(Fig. 207)

♀. Differs from ♀ of *planiusculus* in the characters noted in the key to females, couplet 15. Length of setae of eyes only about half as long as those of *planiusculus*. Antenna (Fig. 207) with pedicellus plus flagellum 1·2–1·3 times breadth of mesoscutum; pedicellus slightly longer than F1; clava slightly longer than F2 plus F3, 3·0–3·3 times as long as broad. Submedian lines of scutellum present but rather weak. Forewing about 2·5 times as long as broad; costal cell 12–13 times as long as broad; *M* 3·6–4·0 times length of *ST*. Gaster, including ovipositor sheaths, 2·5–3·3 times as long as broad; visible part of ovipositor sheaths in dorsal view tapering.

Antennal scape fuscous, testaceous beneath and sometimes basally. Length 1·9–2·1 mm.

♂. Unknown.

MATERIAL EXAMINED

3 ♀. Holotype ♀, **Yugoslavia**: Crna Gora, Durmitor Mts, Žabljak, 25.vi.–7.vii.1958 (*Bouček*) (BMNH).

Paratypes. 2 ♀, same data as holotype (BMNH).

HOST. Unknown.

Aprostocetus (Aprostocetus) glandicola sp. n.

(Figs 451, 452)

♀. Head very slightly broader than mesoscutum, about 2·4 times as broad as long; POL at least twice OOL, OOL nearly twice OD. Eyes about 1·35 times as long as broad. Malar space about 0·5 length of eye, sulcus slightly curved. Mouth slightly greater than malar space. Antenna (Fig. 451) with scape 0·8 length of eye, not reaching median ocellus; pedicellus plus flagellum 1·25 times breadth of mesoscutum; pedicellus fully 2·5 times as long as broad, very slightly longer than F1; funicle proximally hardly stouter than pedicellus, thickening distinctly distad, its segments decreasing slightly in length, F1 2·3 times, F2 1·5 times, F3 1·25 times as long as broad; clava slightly broader than F3, slightly longer than F2 plus F3, 2·5–2·6 times as long as broad, with C1 quadrate, C2 shorter and slightly transverse, C3 very short, spine about 0·5 length of C3, with apical seta about 0·6 length of spine; sensilla moderately numerous, uniseriate, moderately long, subdecumbent with short projecting blades. Thorax 1·5 times as long as broad; propodeal slope about 20°. Pronotum subconical, 0·33 length of mesoscutum. Mid lobe of mesoscutum slightly broader than long, weakly convex, moderately shiny, reticulation extremely fine, delicately engraved, with areoles averaging 3 times as long as broad, some at the sides shorter; median line absent; 4 adnotaular setae on each side, the three anterior short, hindmost long. Scapular flanges triangular. Scutellum 0·9 length of mesoscutum, 1·2 times as broad as long, very weakly convex in profile, with slightly finer sculpture than mesoscutum; submedian lines very weak or obsolescent, enclosing a space twice as long as broad; setae equal, their length slightly less than distance between submedian lines, anterior pair very slightly before middle and placed a little farther laterad than the posterior setae. Dorsellum about 3 times as broad as long. Propodeum medially about 1·5 times as long as dorsellum; median carina rather thin, expanded in posterior third; callus with 2–3 rather short setae. Legs of medium length, rather stout; hind femora 3·7 times as long as broad; spur of mid tibia 0·75 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing (Fig. 452) 2·6 times as long as broad, but not reaching tip of gaster; costal cell distinctly shorter than *M*, about 11 times as long as broad; *SM* with 3 dorsal setae; *M* not thick, 4·5 times length of *ST*, its front edge with 9–10 setae; *ST* at 45°, expanding from near base, stigma rather large; *PM* absent; speculum very narrow, not extending below *M*; wing beyond it rather thickly pilose, especially distad; cilia about 0·3 length of *ST*. Hindwing subobtuse; cilia 0·35 breadth of wing. Gaster ovate, somewhat longer than head plus thorax, slightly broader than thorax, 1·8 times as long as broad, acute and very slightly acuminate; last tergite about as long as broad; ovipositor sheaths projecting slightly; longest seta of each cercus 2·2 times length of next longest, kinked; tip of hypopygium at half length of gaster.

Body brownish black, non-metallic. Antennal scape, pedicellus and anelli yellowish, flagellum brown. Legs including all coxae pale yellowish, only the claws brown. Tegulae fuscous. Wings subhyaline, venation yellowish. Length 1·25–1·30 mm.

♂. Unknown.

MATERIAL EXAMINED

2 ♀. Holotype ♀, **France**: Ille et Vilaine, Rennes, reared vii.1960 from gall of *Callirhytis glandium* (Giraud) (*R. Folliot*) (RRA).

Paratype. 1 ♀, same data as holotype (RRA).

HOST. *Callirhytis glandium* (Giraud).

COMMENT. This species is rather isolated in the subgenus *Aprostocetus* although it has many features in common with members of the *lycidas*-group.

Aprostocetus (Aprostocetus) calvus (Domenichini) **comb. n.**

(Figs 188, 189)

Tetrastichus sp.; Parker, 1924: *passim*, figs 27, 94, 129, 130, 175; Parker & Thompson, 1928: 446–449.
Tetrastichus calvus Domenichini, 1966*a*: 187–188; 1966*b*: 22. Holotype ♀, FRANCE: Hyères, 30.vii.1923 (MCSN) [examined].

Both holotype and paratypes of *calvus* have been examined. Some details of structure not mentioned in the original description are given here.

♀. Eyes 1·3 times as long as broad. Malar space 0·62 length of eye, sulcus with a narrow wedge-shaped fovea extending 0·35 length of gena. Mouth 1·2 malar space. Antenna (Fig. 189): toruli level with or very slightly below ventral edge of eyes; scape reaching median ocellus; pedicellus plus flagellum about equal to breadth of mesoscutum. Thorax 1·5 times as long as broad; propodeal slope 40°–45°. Pronotum about 0·25 as long as mesoscutum. Mid lobe of mesoscutum weakly convex, shiny, with extremely fine, superficial or lightly engraved reticulation having most areoles 1·5–2·0 times as long as broad. Scutellum 1·3–1·4 times as broad as long; submedian lines very weak or obsolescent, about equidistant from each other and from sublateral lines, enclosing a space about 2·3 times as long as broad; anterior setae behind middle, about twice as far from front edge of scutellum as from posterior setae, about equidistant from submedian and sublateral lines. Dorsellum 2·35 times as broad as long, hind edge curved. Propodeum medially slightly longer than dorsellum; median carina thin except near dorsellum where it is slightly expanded. Hind femora 4 times as long as broad; spur of mid tibia 0·5 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing (Fig. 188) (Domenichini, 1966*a*: fig. 15) with costal cell shorter than *M*, about 8 times as long as broad; *M* 3·7–3·8 times length of *ST*. Gaster about 1·7 times as long as broad; last tergite twice as broad as long; longest seta of each cercus twice length of next longest, kinked.

♂. Described very briefly, as *Tetrastichus* sp., by Parker & Thompson (1928). Neither Domenichini nor I have located their material so that a detailed redescription cannot be given at present.

MATERIAL EXAMINED

3 ♀ (holotype, paratypes). **France**: Hyères, 30.vii.1923.

HOST. *Zeuxevania splendidula* Costa in oothecae of *Loboptera decipiens* Germ or (Blattodea). The immature stages of the parasite were described and figured by Parker (1924).

COMMENT. *A. calvus* is placed provisionally in the *lycidas*-group, though it is an aberrant member. More exact placing must await the rediscovery of the ♂ which should provide useful taxonomic characters.

The *elongatus*-group

Hyperteles Förster, 1856: 84, 86.

Characters of *lycidas*-group, except that antenna of ♀ has only 3 anelli but 4 funicular segments of which the first is quadrate or longer than broad. Males can hardly be distinguished from those of some species of the *lycidas*-group. For this reason I do not follow some authors who regard *Hyperteles* as of generic status.

The three known species, all from Europe, are associated with hosts (Diptera: Cecidomyiidae) on *Fagus*.

Aprostocetus (Aprostocetus) elongatus (Förster) **comb. rev.**

(Figs 184, 185, 510, 653)

Eulophus elongatus Förster, 1841: 41. Syntypes, GERMANY (*Förster*) (? NM) [not examined].
Eulophus signaticollis Walker, 1847: 230. Lectotype ♀, AUSTRIA (*Kollar*) (UM), designated by Graham (1961*b*: 61) [examined].
Entedon macroneurus Ratzeburg, 1852: 214. Syntypes ♂, GERMANY (destroyed).
Hyperteles elongatus (Förster) Förster 1856: 86.
Tetrastichus (Oxymorpha) elongatus (Förster) Thomson, 1878: 280.
Tetrastichus intermedius Thomson, 1878: 281–282. LECTOTYPE ♀, SWEDEN (ZI), here designated [examined]. **Syn. n.**
Hyperteles elongatus (Förster) Masi, 1933: 61; Dziurzyński, 1961: 81–89, 91–107; Domenichini, 1966*a*: 196; 1966*b*: 54; Kostjukov, 1978*b*: 433.
Aprostocetus elongatus (Förster) Graham, 1961*b*: 61.

There are 4 ♀ syntypes of *Tetrastichus intermedius* in the Thomson collection (ZI). The lectotype is labelled 'Sc' [Scania], 'Bhn' [Boheman] and 'intermedius Ths.'. Thomson's *intermedius* was based upon smaller females of *elongatus* having the first funicular segment of the antenna subquadrate. This form is connected with the nominotypical form of *elongatus* by transitions.

♀. Head slightly broader than mesoscutum, 2·5–2·7 times as broad as long; POL approximately equal to OOL, OOL about twice OD. Eyes about 1·2 times as long as broad, separated by 1·6 times their length. Malar space 0·70–0·75 length of eye, sulcus nearly straight. Mouth 1·3–1·4 malar space. Antenna (Figs 184, 185) with scape 1·1–1·2 length of eye, reaching well above vertex; pedicellus plus flagellum 1·3–1·6 times breadth of mesoscutum; pedicellus 2·4–2·6 times as long as broad, about twice length of F1; F1 much shorter than F2, slightly less stout than pedicellus, quadrate in small ♀ but up to twice as long as broad in large ♀, usually lacking sensilla but occasionally with 1 in large specimens; rest of funicle slightly stouter than pedicellus although slender, filiform, its segments decreasing slightly in length, F2 3·0–4·5 times, F3 2·0–2·6 times, F4 2·0–2·3 times as long as broad; clava slightly broader than F4, slightly to somewhat longer than F3 plus F4, bluntly pointed, with C1 and C2 subequal in length, each 1·6–2·0 times as long as broad, C3 very short, spine about 0·4 length of C3, with apical seta somewhat shorter than spine; sensilla numerous, in 1 irregular row or in 2 partly overlapping rows except on C3, those of proximal row of each segment with short bases and long projecting blades, those of distal row with longer bases and shorter blades. Thorax about 1·5 times as long as broad; propodeal slope 45°. Pronotum short. Mid lobe of mesoscutum as long as or slightly longer than broad, moderately convex, moderately shiny, with excessively fine, delicately engraved reticulation having most areoles 3–4 times as long as broad; median line absent; 4–6 adnotaular setae on each side. Scutellum 1·2–1·3 times as broad as long, moderately convex; submedian lines equidistant from each other and from sublateral lines, parallel, enclosing a space

2·4–2·6 times as long as broad; setae equal, their length 0·8–1·0 distance between submedian lines, anterior pair slightly behind or in middle. Dorsellum 2·0–2·5 times as broad as long. Propodeum medially slightly shorter than or almost as long as dorsellum, moderately shiny; callus usually with 2, occasionally 3, setae; otherwise as *lycidas*. Legs long and slender, especially tibiae and tarsi; hind coxae oblique, 2·5 times as long as broad, shiny; hind femora fully 5 times as long as broad; spur of mid tibiae about 0·55 length of basitarsus, fourth tarsomere distinctly shorter than basitarsus. Forewing 2·3–2·5 times as long as broad; costal cell shorter than *M*, 9–11 times as long as broad, lower surface with single or double row of setae; *SM* with 4–7 dorsal setae; *M* 4–5 times length of *ST*, its front edge with 17–25 setae; *ST* at 40°–45°, thin proximally, stigma small and oblong; *PM* a short stub or rudimentary; speculum moderate-sized, not extending below *M*; wing beyond it rather thickly pilose, especially distad; cilia 0·25–0·50 length of *ST*. Hindwing obtuse; cilia 0·15–0·25 breadth of wing. Gaster lanceolate, about twice length of head plus thorax, slightly narrower or as broad as thorax, 4·5–6·0 times as long as broad, strongly acuminate; last tergite 2·2–2·5 times as long as broad; ovipositor sheaths projecting by 0·14–0·40 length of last tergite; longest seta of each cercus 1·6 length of next longest; tip of hypopygium at 0·3 length of gaster.

Body non-metallic, black with yellow or tan markings which vary from few to extensive. Dziurzyński (1961: pl. 16, figs 26–29) illustrated some of the colour forms. Length 2·9–4·8 mm.

♂. Antenna (Fig. 510) with scape slightly longer than eye, reaching well above vertex, 2·8–3·5 times as long as broad, with ventral plaque 0·33–0·40 length of scape; pedicellus plus flagellum 2·00–2·25 times breadth of mesoscutum; pedicellus 1·9–2·1 times as long as broad, from slightly shorter to slightly longer than F1; F1 about 0·6 length of F2 and 1·25–1·60 times as long as broad, following segments tending to increase very slightly in length, F2 2·5–3·0 times, F3 3·0–3·5 times, F4 3·4–3·7 times as long as broad; clava slightly shorter than F2 plus F3 plus F4, 7–8 times as long as broad, with C1 and C2 subequal in length, each 2·5–3·5 times as long as broad, C3 somewhat shorter; whorled setae long, those of F1 reaching about middle of F3. Genitalia: see Dziurzyński, 1961: pl. 14, fig. 14; and Fig. 653.

Body black with following parts testaceous: upper angle of mesopleuron, often sides or whole of dorsellum, mouth-edge narrowly to broadly, sometimes a spot in each front angle of mesoscutum, prepectus more or less. Dark males have all coxae black, hind femora mainly so, also a greater or less extent of mid and fore femora. Pale males have legs entirely testaceous except mid and hind coxae.

MATERIAL EXAMINED

Many ♂, ♀. **Austria**, **Czechoslovakia**, **Denmark**, **France**, **Germany**, **Great Britain**, **Hungary**, **Italy**, **Poland**, **Sweden**, **Switzerland**.

HOST. *A. elongatus* is a phytophagous inquiline in galls of *Mikiola fagi* (Hartig) on *Fagus*. Its biology has been described by Dziurzyński (1961).

Aprostocetus (Aprostocetus) luteus (Ratzeburg) **comb. rev.**

(Figs 182, 485, 727)

Entedon luteus Ratzeburg, 1852: 209. Holotype ♀, GERMANY (destroyed). NEOTYPE ♀, CZECHOSLOVAKIA: Bohemia, Horska Kvilda Šumava, 26.viii.1962 (*Bouček*) (BMNH), here designated [examined].
Tetrastichus (Oxymorpha) luteus (Ratzeburg) Thomson, 1878: 281.
Hyperteles luteus (Ratzeburg) Dalla Torre, 1898*a*: 8; Dziurzyński, 1961: 89–106; Domenichini, 1966*a*: 195; 1966*b*: 55; Kostjukov, 1978*b*: 433.
Aprostocetus luteus (Ratzeburg) Graham, 1961*b*: 61.

Ratzeburg described *luteus* from a single ♂ reared by Tischbein from beech-leaf galls. It appears to have been destroyed together with most of the Ratzeburg collection in 1945. Domenichini (1966*a*: 195) stated that he had examined 'i sintipi (♀♀) di Ratzeburg presso il Museo di Vienna', but this is a mistake. Ratzeburg did mention a single ♀ reared from 'Tinea leucatella' but he assigned it only doubtfully to *luteus*. A neotype is therefore designated.

♀. Malar sulcus with a large wedge-shaped fovea extending from the eye to almost half the length of the gena. Antenna (Fig. 182) with pedicellus at least a little shorter than F1, the latter nearly or just as long as F2 and, like it, provided with sensilla; anelli (Fig. 727); clava slightly to very distinctly longer than F3 plus F4. Space enclosed by submedian lines of scutellum 2·1–2·5 times as long as broad. Forewing with *ST* thinner, stigma smaller and poorly defined. Gaster usually 3·8–4·5 times as long as broad but occasionally much shorter, in one ♀ only 2·6 times and somewhat less than twice length of thorax.

Colour more variable than in *elongatus*, the tan or yellowish markings tending to be more extensive. Palest forms yellow with following parts black: ocellar triangle, transverse mark on upper part of occipital surface, a small spot on front of pronotum and a dot above each spiracle, carinae bordering the axillae and metanotum laterally, middle of propodeum, ovipositor sheaths and a few transverse marks on gastral tergites. In extremely dark forms the occipital surface mainly, middle of pronotum, mesoscutum mainly and anterior part of scapulae and of axillae, scutellum and metanotum mainly, propodeum, metapleuron, mesosternum and dorsal surface of gaster, are black. All intermediates between these extremes occur. Five colour-forms were illustrated by Dziurzyński (1961: pl. 16, figs 30–34).

♂. Antenna (Fig. 485) differs from that of ♂ *elongatus* in having pedicellus plus flagellum 2·1–2·2 times breadth of mesoscutum; pedicellus about 1·8 times as long as broad, slightly shorter than F1; F1 1·7–1·9 times as long as broad, F2 much longer and 2·9–3·1 times as long as broad, F3 hardly longer than F2 and 3·5 times as long as broad, F4 as long as F3 and 4·0–4·3 times as long as broad; clava 8·0–9·3 times as long as broad.

Colour range much as in ♀. In pale forms the gaster is yellow with posterior half mainly black, in very dark forms it is wholly black.

MATERIAL EXAMINED

5 ♂, 15 ♀. **Czechoslovakia**, **France**, **Germany**, **Great Britain**, **Hungary**, **Poland**, **Sweden**. Also recorded from Austria and Italy by Domenichini (1966*a*).

HOSTS. *A. luteus* is an ectophagous, facultative necrophagous parasite of larvae of *Mikiola fagi* (Hartig) and of *Aprostocetus elongatus* (Förster) (Dziurzyński, 1961).

Aprostocetus (Aprostocetus) collega (Ratzeburg) comb. n.

(Fig. 183)

Eulophus collega Ratzeburg, 1844*b*: 164. Syntypes, 3 ♀, GERMANY (destroyed).
Aprostocetus fageti Graham, 1961*a*: 33–35. Holotype ♀, GREAT BRITAIN: England, Hampshire, Denny Wood, 9.ix.1958 (*Graham*) (UM) [examined]. **Syn. n.**
Hyperteles fageti (Graham) Domenichini, 1966*a*: 195; 1966*b*: 55; Kostjukov, 1978*b*: 433.

Ratzeburg had 3 specimens of *collega* (evidently ♀) which he stated to have a broader and less acuminate gaster, smaller size, and more extensive dark coloration than *elongatus*. These features fit the ♀ of *fageti* Graham very well and this is here synonymized with *collega*.

♀. For full description see Graham (1961*a*).

♂. Unknown.

MATERIAL EXAMINED

12 ♀. **Great Britain**, **Netherlands**.

HOST. Unknown. In Britain I have several times swept the species from foliage of *Fagus sylvatica* infested with galls of *Hartigiola annulipes* (Hartig) which might be a host. Ratzeburg (1944*b*: 164) stated that his specimens of *collega* had been obtained from galls of *Cecidomyia* [=*Mikiola*] *fagi* (Hartig).

XENAPROSTOCETUS gen. n.

Type-species: *Xenaprostocetus pungens* sp. n. Gender: masculine.

♀. Frons with median longitudinal line. Malar sulcus present. Anterior margin of clypeus truncate. Mandible tridentate. Lower edge of antennal toruli very slightly below ventral edge of eyes. Antenna (Fig. 453) with normal scape and pedicellus; 3 funicular segments and 3-segmented clava, the latter with a very long terminal spine. Thorax (Fig. 48) with pronotum rather long. Mid lobe of mesoscutum without median line, with only 2 very short adnotaular setae on each side. Scapular flanges narrow. Scutellum with weak submedian lines; 2 pairs of short setae, all of which are slightly nearer to the sublateral lines than to the submedian lines. Propodeum with median carina; spiracles small, circular, separated by about their diameter from hind edge of metanotum, their whole rim exposed. Legs short and stout, especially the femora. Forewing with costal cell slightly shorter than marginal vein; submarginal vein with 3 dorsal setae; postmarginal vein somewhat shorter than stigmal vein; apical margin of wing bare. Gastral petiole transverse, smooth. Gaster ovate, acute; each cercus with one seta about twice the length of the next longest, kinked. Body non-metallic, testaceous with brown markings.

♂. Unknown.

DISTRIBUTION. **Czechoslovakia.**

COMMENTS. This genus is close to *Aprostocetus* but differs as follows. Anterior margin of clypeus truncate; propodeal spiracles smaller than in all *Aprostocetus* except species of the subgenera *Ootetrastichus* and *Chrysotetrastichus*, separated by a greater distance from hind edge of metanotum, their whole rim exposed; apical margin of forewing (Fig. 47) lacking cilia. Other species having the apical margin of the forewing bare are *Aprostocetus calvus*, which has propodeal spiracles oval and almost touching the metanotum; and two species of *Eutetrastichus*, which have anterior margin of clypeus bidentate and body black with metallic tints.

Only the type-species is known.

***Xenaprostocetus pungens* sp. n.**

(Figs 47, 48, 453)

♀. Head about as broad as mesoscutum, somewhat collapsed; POL probably at least twice OOL. Eyes 1·5 times as long as broad, with very short, sparse pubescence. Malar space 0·53 length of eye, sulcus strongly bent near eye, then straight. Mouth 1·6 times malar space. Antenna (Fig. 453) with scape 0·9 length of eye; pedicellus plus flagellum about equal to breadth of mesoscutum; pedicellus about 1·8 times as long as broad, hardly longer than F1; funicle proximally hardly stouter than pedicellus, thickening slightly distad, its segments decreasing very slightly in length, F1 1·4 times as long as broad, F2 subquadrate, F3 very slightly transverse; clava not broader than F3, distinctly longer than F2 plus F3, 2·5 times as long as broad, pointed, its segments decreasing in length, spine nearly as long as C3, apparently lacking an apical seta; sensilla not very numerous, uniseriate, moderately long, decumbent with slightly projecting tips. Thorax (Fig. 48) 1·4 times as long as broad; propodeal slope 30°. Pronotum 0·6 as long as mesoscutum; setae near hind margin very short. Mid lobe of mesoscutum rather weakly convex, shiny, with moderately fine and delicately engraved reticulation having most areoles about 3 times as long as broad; median line absent; 3 very short adnotaular setae on each side. Scutellum very weakly convex in profile, more finely reticulate than mesoscutum; submedian lines weak, distinctly nearer to sublateral lines than to each other, enclosing a space 1·75 times as long as broad; setae equal, very short and weak, slightly nearer to sublateral lines than to submedian lines, anterior pair in middle. Dorsellum and propodeum as in Fig. 48, shiny, with fine, delicate and superficial reticulation. Legs short and stout; hind coxae oblique; spur of mid tibia fine, 0·53 length of basitarsus, fourth tarsomere shorter than basitarsus. Forewing (Fig. 47) 2·35 times as long as broad; costal cell shorter than *M*, about 13 times as long as broad, its lower surface with a row of setae; *SM* with 3 dorsal setae; *M* slightly thickened, about 3·5 times length of *ST*, its front edge with 12 short setae; *ST* thin, nearly straight, stigma small; *PM* tapering, 0·6 length of *ST*; speculum very narrow but extending as a narrow wedge below *M* for about half its length; wing beyond it moderately thickly pilose, the setae very short; cilia absent except for a few short setae near anal margin. Hindwing bluntly pointed; cilia 0·6 breadth of wing. Gaster ovate, 1·5 times as long as head plus thorax, broader than thorax, fully twice as long as broad, acute; last tergite broader than long; ovipositor sheaths projecting very slightly; longest seta of each cercus twice length of next longest, kinked; tip of hypopygium at half length of gaster.

Body dark brown, with scutellum somewhat paler; metanotum, propodeum, whole pleuron and mesosternum, petiole and a spot on last tergite of gaster, testaceous. Antennal scape and pedicellus testaceous, darker dorsally; flagellum brown. Legs yellowish. Tegulae brownish testaceous. Wings hyaline, venation pale testaceous. Length 1·1 mm.

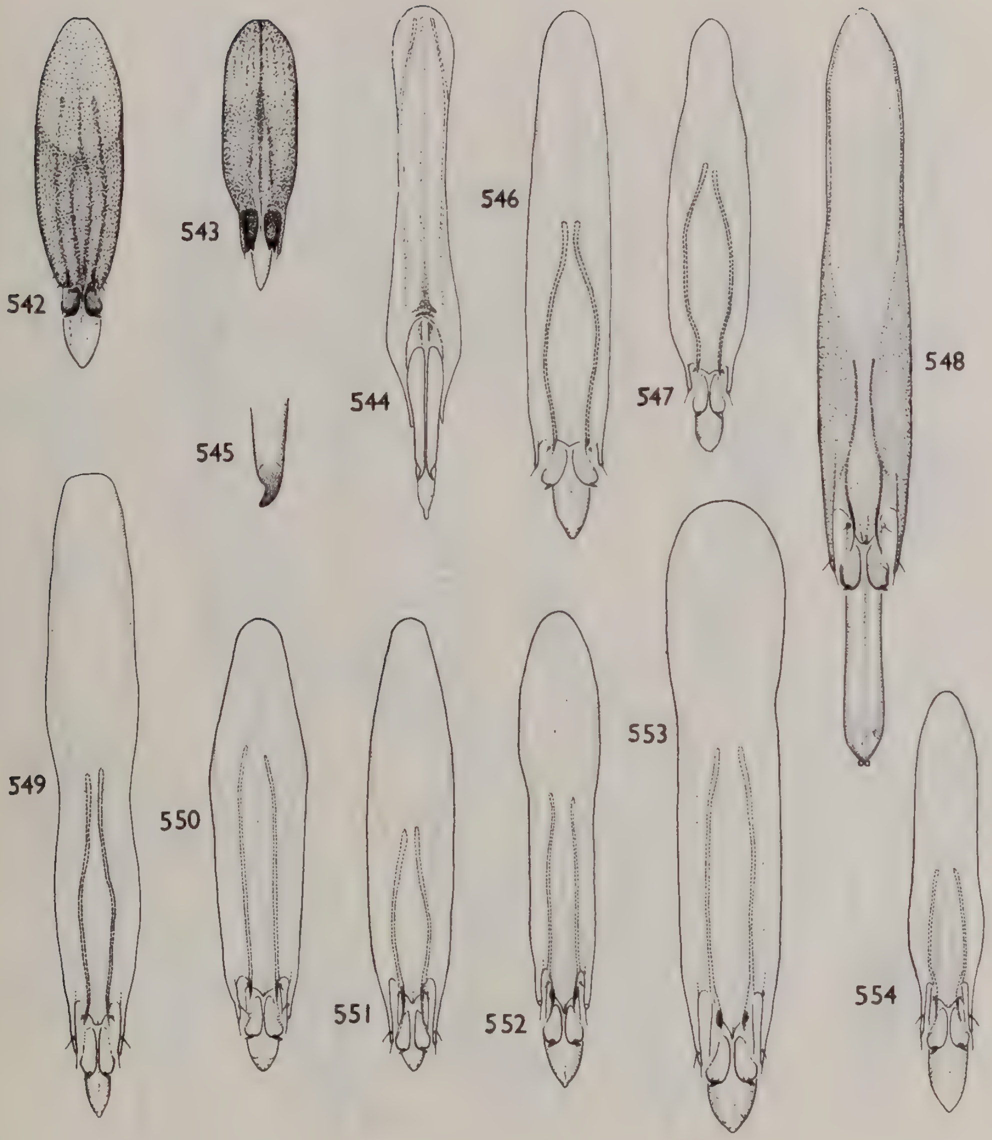
♂. Unknown.

MATERIAL EXAMINED

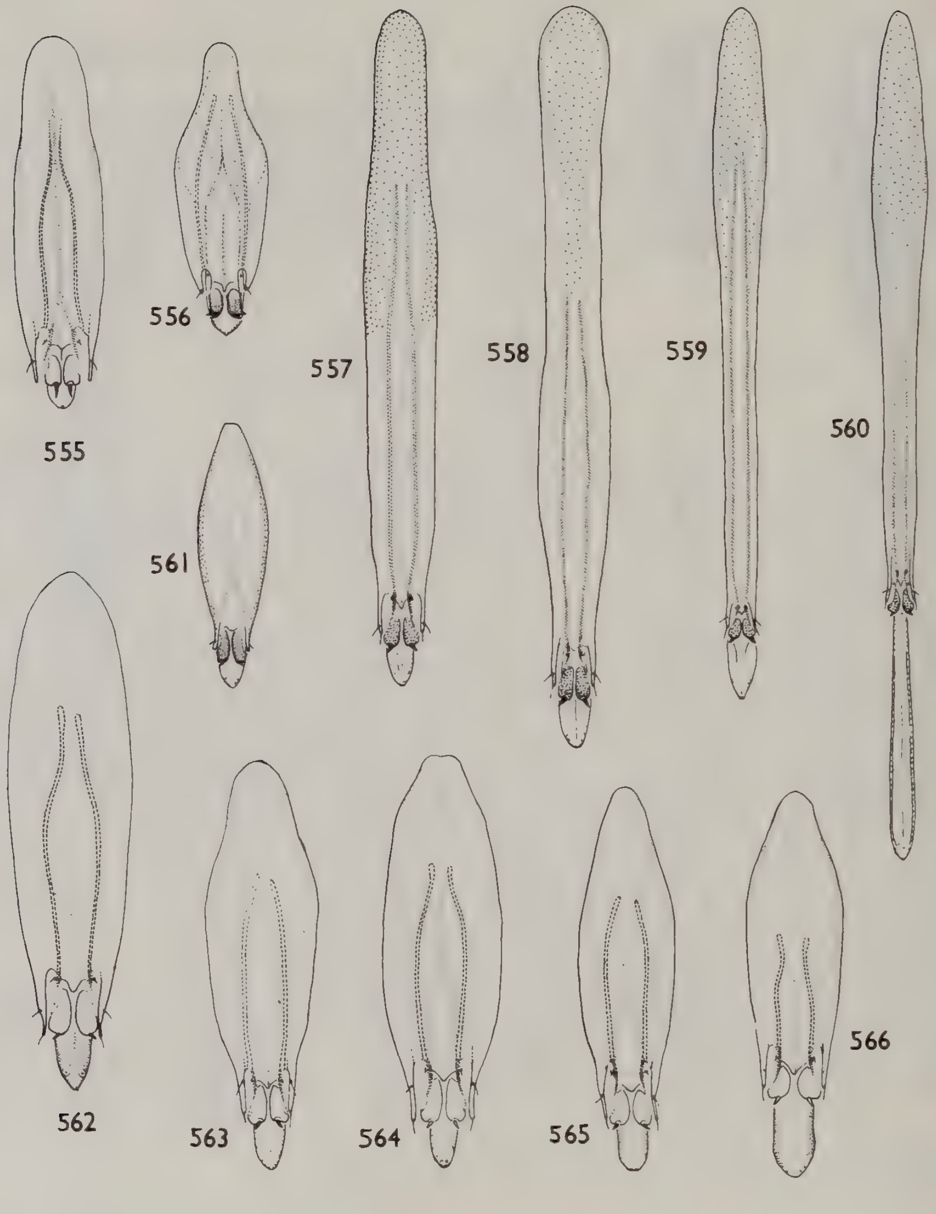
1 ♀. Holotype ♀, **Czechoslovakia**: Moravia, Pavlovské kopce, 26.vi.1954 (*A. Hoffer*) (BMNH).

HOST. Unknown.

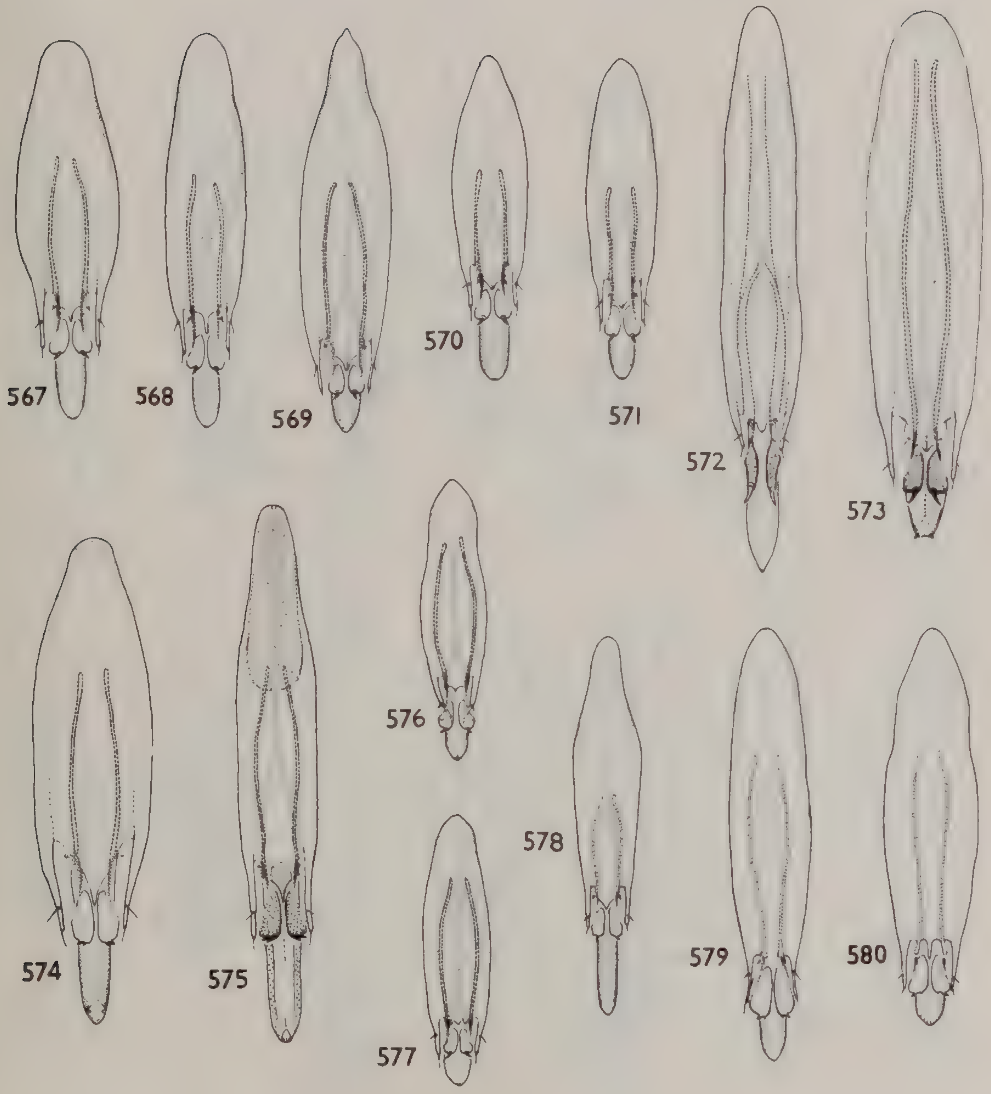
COMMENT. The right forewing and hindwing of the holotype are missing.



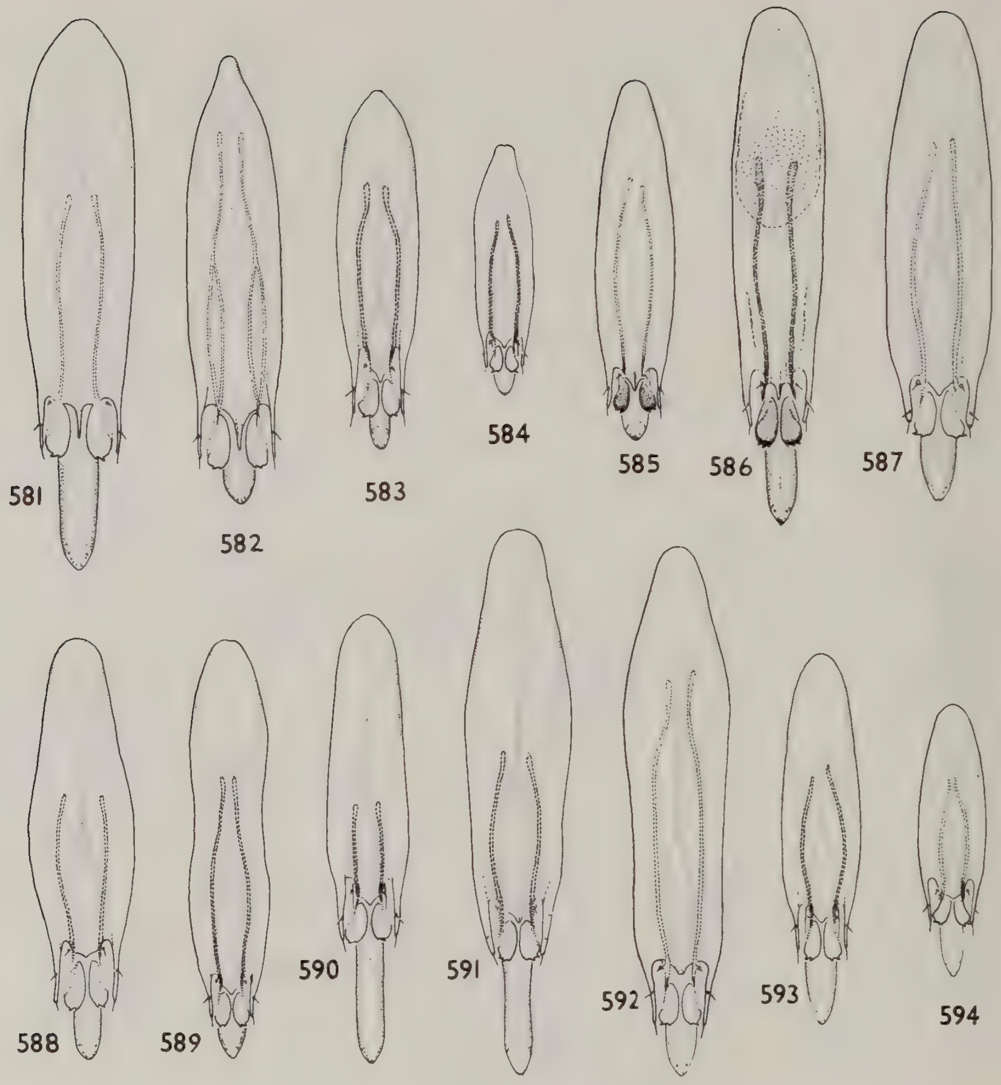
Figs 542–554 Genitalia, males, ventral; all figures × 300, unless otherwise indicated. 542, *Sphenolepis pygmaea* Nees × 400. 543, *Peckelachertus diprioni* Yoshimoto × 200. 544, *Tamarixia monesus* (Walker). 545, *T. pronomus* (Walker) digitus, detail. 546, *Neotrichoporoides viridimaculatus* (Fullaway). 547, *N. dispersus* Graham. 548, *N. nyemitawus* (Rohwer). 549, *N. mediterraneus* Graham. 550, *N. gordensis* sp. n. 551, *N. cavigena* sp. n. 552, *N.* sp. near *dubiosus* sp. n. 553, *N. cynodontis* (Domenichini). 554, *N. biogradensis* sp. n.



Figs 555–566 Genitalia, males. 555, *Minotetrastichus ecus* (Walker). 556, *Apotetrastichus postmarginalis* (Bouček) × 600. 557, *Sigmophora brevicornis* (Panzer). 558, *S. italica* (Domenichini). 559, *Kolopterna* sp. 560, *K. quartensis* sp. n. 561, *Aprostocetus* (*Tetrastichodes*) *hagenowii* (Ratzeburg) × 400. 562, *Anaprostocetus acuminatus* (Ratzeburg). 563, *Aprostocetus* (*Ootetrastichus*) *rufus* (Bakkendorf). 564, *A.* (*O.*) *eupatorii* Kurdjumov. 565, *A.* (*O.*) *mycerinus* (Walker). 566, *A.* (*O.*) *citripes* (Thomson).



Figs 567–580 Genitalia, males. 567, *Aprostocetus* (*Ootetrastichus*) *polygoni* (Erdös). 568, *A.* (*O.*) *ovivorax* (Silvestri). 569, *A.* (*O.*) *percaudatus* (Silvestri). 570, *A.* (*O.*) *crino* (Walker). 571, *A.* (*O.*) *ibericus* sp. n. 572, *A.* (*O.*) *mandanis* (Walker). 573, *A.* (*Coriophagus*) *eurytus* (Walker). 574, *Aprostocetus* (*Aprostocetus*) *asperulus* (Graham). 575, *A.* (*A.*) *diplosidis* Crawford. 576, *Aprostocetus* (*Chrysotetrastichus*) *oreophilus* (Förster). 577, *A.* (*C.*) *celtidis* (Erdös). 578, *Aprostocetus* (*Aprostocetus*) *aurantiacus* (Ratzeburg). 579, *A.* (*A.*) *eurytomae* (Nees). 580, *A.* (*A.*) *westwoodii* (Fonscolombe).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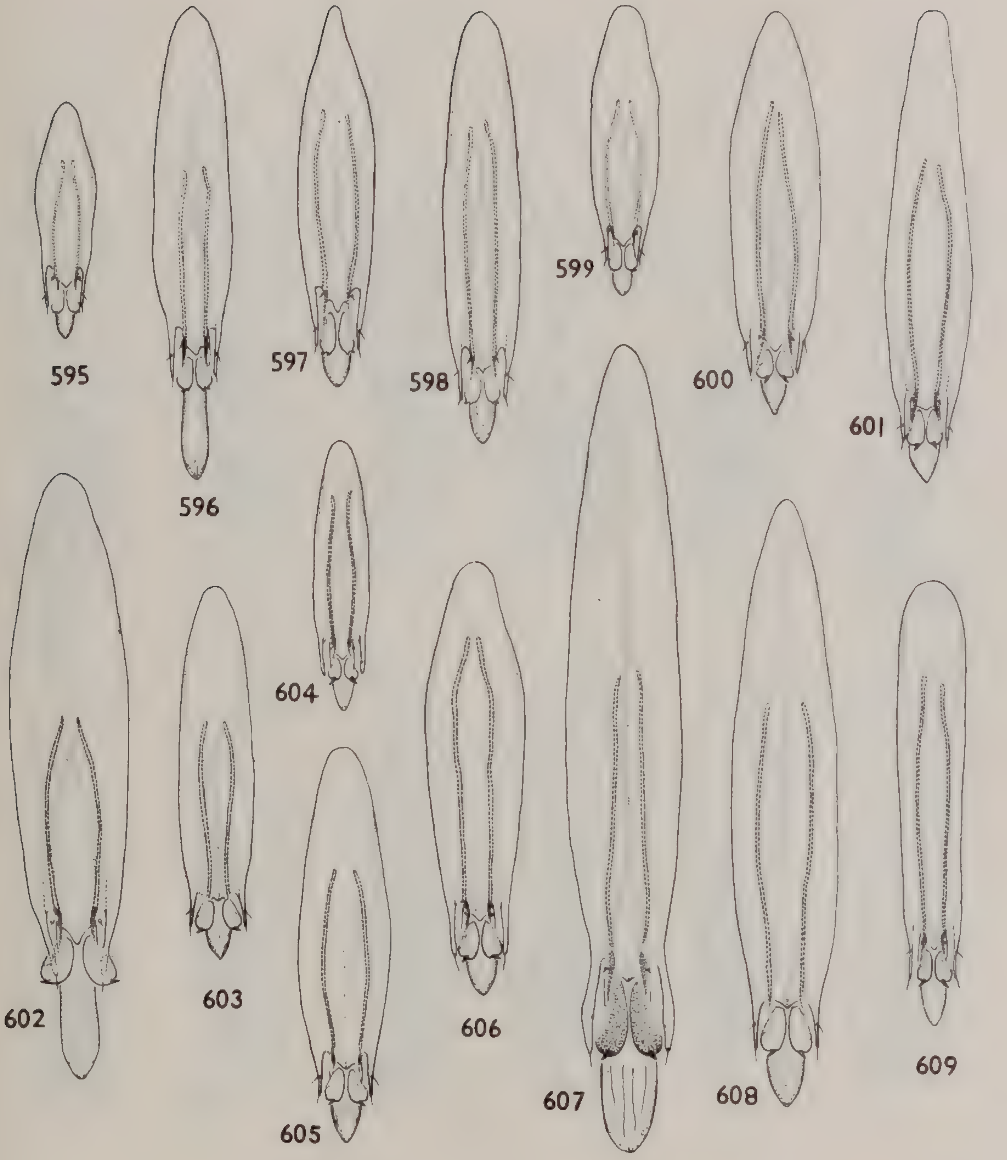
Figs 581–594 Genitalia, males. 581, *Aprostocetus* (*Aprostocetus*) *grandii* (Domenichini). 582, *A.* (*A.*) *dauci* sp. n. 583, *A.* (*A.*) *epicharmus* (Walker). 584, *A.* (*A.*) *agrus* (Walker). 585, *A.* (*A.*) *lysippe* (Walker). 586, *A.* (*A.*) *zosimus* (Walker). 587, *A.* (*A.*) *salictorum* sp. n. 588, *A.* (*A.*) *anodaphus* (Walker). 589, *A.* (*A.*) *minimus* (Ratzeburg). 590, *A.* (*A.*) *artemisiae* (Erdös), paralectotype. 591, *A.* (*A.*) *cecidomyiarum* (Bouché). 592, *A.* (*A.*) *verutus* Graham. 593, *A.* (*A.*) *amenon* (Walker). 594, *A.* (*A.*) *terebrans* Erdös.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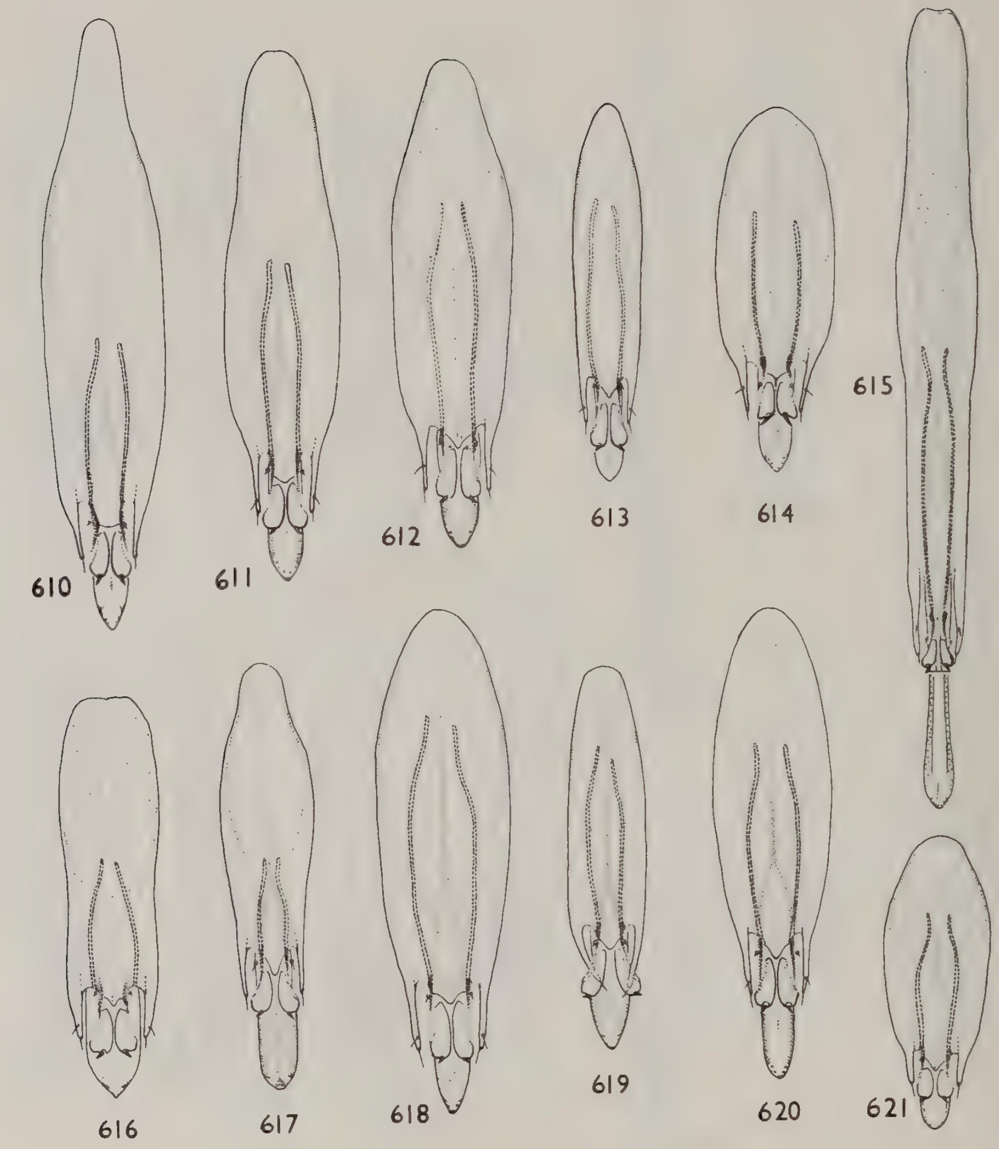
Figs 595–609 Genitalia, males. 595, *Aprostocetus* (*Aprostocetus*) *ciliatus* (Nees). 596, *A.* (*A.*) *caudatus* Westwood. 597, *A.* (*A.*) *menius* (Walker). 598, *A.* (*A.*) *meroe* sp. n. 599, *A.* (*A.*) *atticus* sp. n. 600, *A.* (*A.*) *clavicornis* (Zetterstedt). 601, *A.* (*A.*) *phillyreae* (Domenichini). 602, *A.* (*A.*) *occidentalis* sp. n. 603, *A.* (*A.*) *pausiris* (Walker). 604, *A.* (*A.*) *meridionalis* sp. n. 605, *A.* (*A.*) *arrabonicus* (Erdös). 606, *A.* (*A.*) *aristaeus* (Walker). 607, *A.* (*A.*) *bucculentus* (Kostjukov). 608, *A.* (*A.*) *serratularum* sp. n. 609, *A.* (*A.*) *venustus* (Gahan).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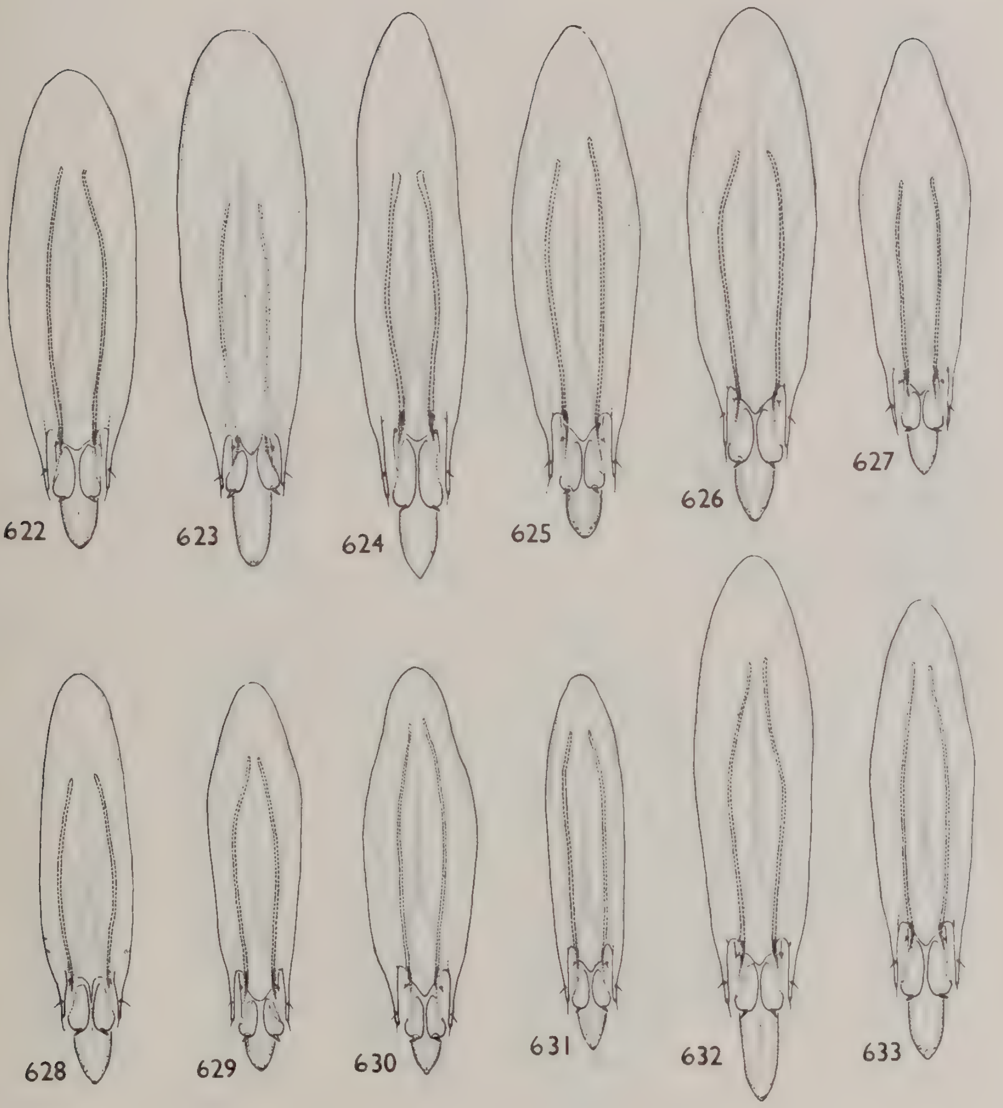
Figs 610–621 Genitalia, males. 610, *Aprostocetus* (*Aprostocetus*) *orithyia* (Walker). 611, *A.* (*A.*) *gratus* (Giraud). 612, *A.* (*A.*) *phragmiticola* sp. n. 613, *A.* (*A.*) *foraminifer* sp. n. 614, *A.* (*A.*) *xanthopus* (Nees). 615, *A.* (*A.*) *grylli* (Erdös). 616, *A.* (*A.*) *boreus* (Delucchi). 617, *A.* (*A.*) *pachyneuros* (Ratzeburg). 618, *A.* (*A.*) *balasi* (Erdös). 619, *A.* (*A.*) *domenichinii* (Erdös). 620, *A.* (*A.*) *cerricola* (Erdös). 621, *A.* (*A.*) *neglectus* (Domenichini).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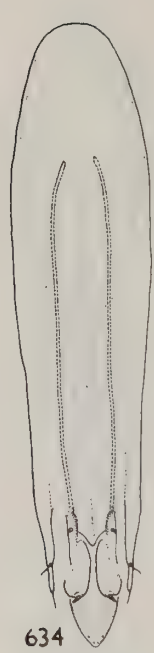
Figs 622–633 Genitalia, males. 622, *Aprostocetus* (*Aprostocetus*) *constrictus* sp. n. 623, *A.* (*A.*) *flavifrons* (Walker). 624, *A.* (*A.*) *citrinus* (Förster). 625, *A.* (*A.*) *tymber* (Walker). 626, *A.* (*A.*) *obliquus* sp. n. 627, *A.* (*A.*) *femoralis* (Sundby). 628, *A.* (*A.*) *abydenus* (Walker). 629, *A.* (*A.*) *metra* (Walker). 630, *A.* (*A.*) *lycidas* (Walker). 631, *A.* (*A.*) *trjapitzini* (Kostjukov). 632, *A.* (*A.*) *aethiops* (Zetterstedt). 633, *A.* (*A.*) *pallipes* (Dalman).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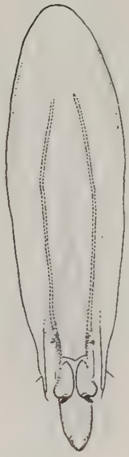
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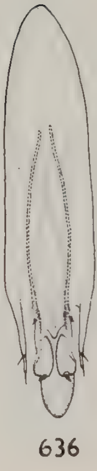
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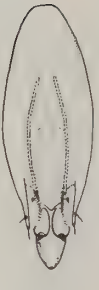
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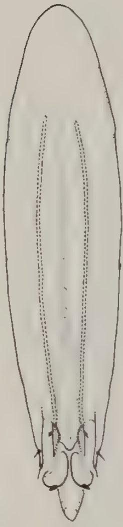
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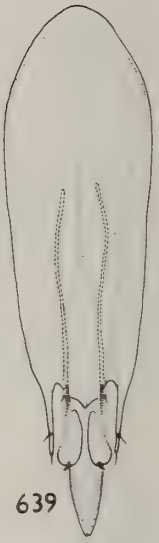
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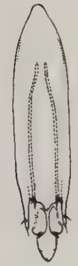
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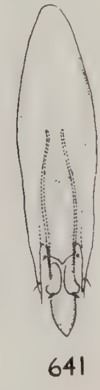
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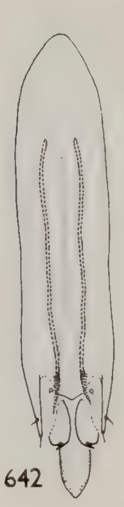
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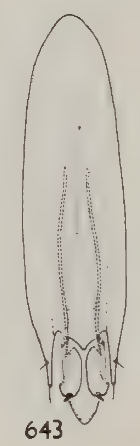
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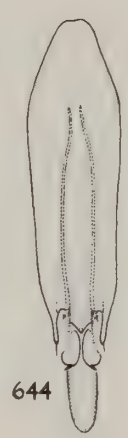
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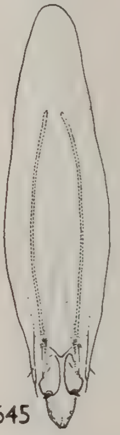
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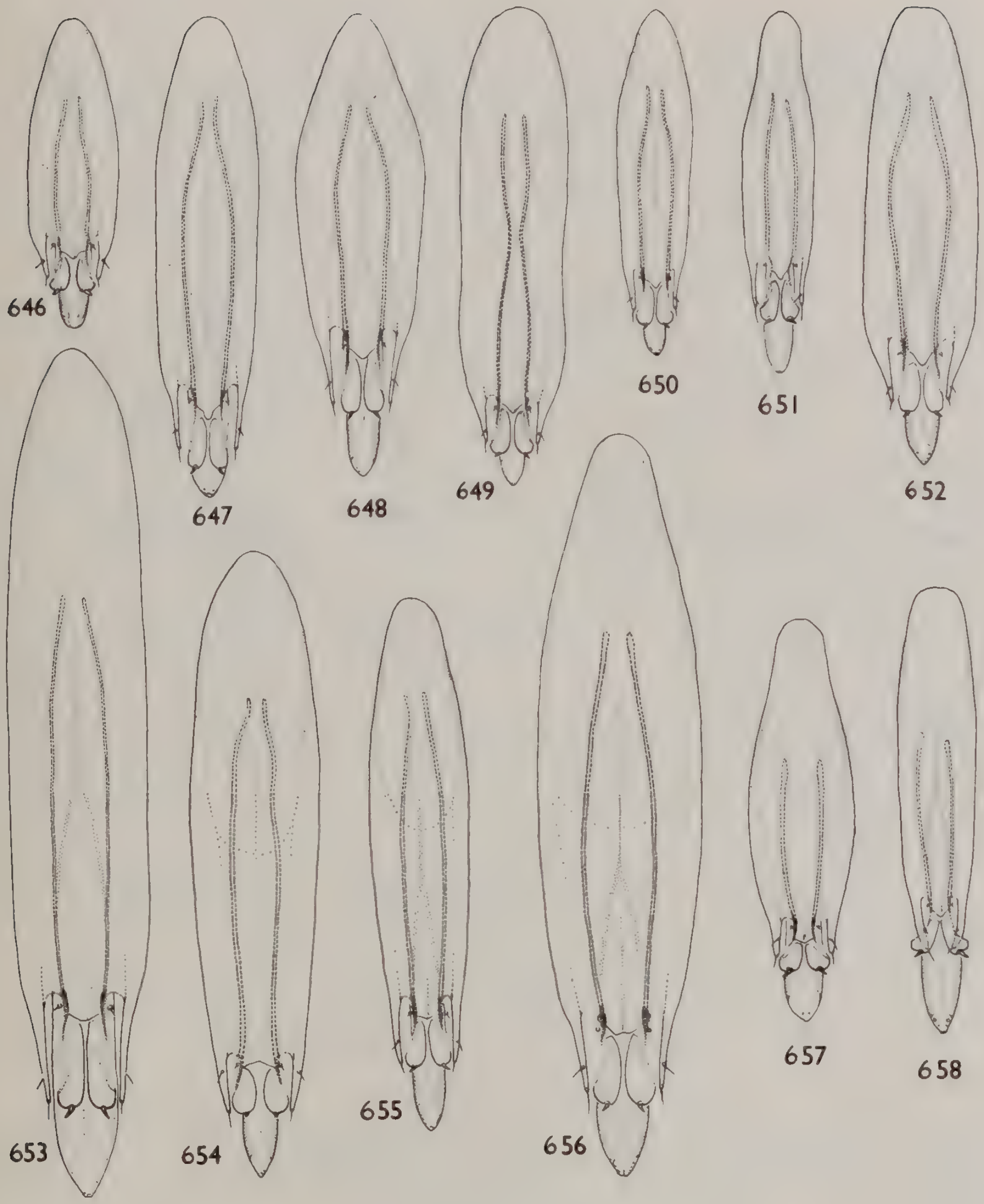
Figs 634–645 Genitalia, males. 634, *Aprostocetus* (*Aprostocetus*) *humilis* Graham. 635, *A.* (*A.*) *incrassatus* Graham. 636, *A.* (*A.*) *phineus* (Walker). 637, *A.* (*A.*) *bruzzonis* (Masi). 638, *A.* (*A.*) *ligus* (Walker). 639, *A.* (*A.*) *deplanatus* (Walker). 640, *A.* (*A.*) *subanellatus* Graham. 641, *A.* (*A.*) *phragmitinus* (Erdös). 642, *A.* (*A.*) *pygmaeus* (Zetterstedt). 643, *A.* (*A.*) *micantulus* (Thomson). 644, *A.* (*A.*) *coccidiphagus* sp. n. 645, *A.* (*A.*) *ptarmicae* sp. n.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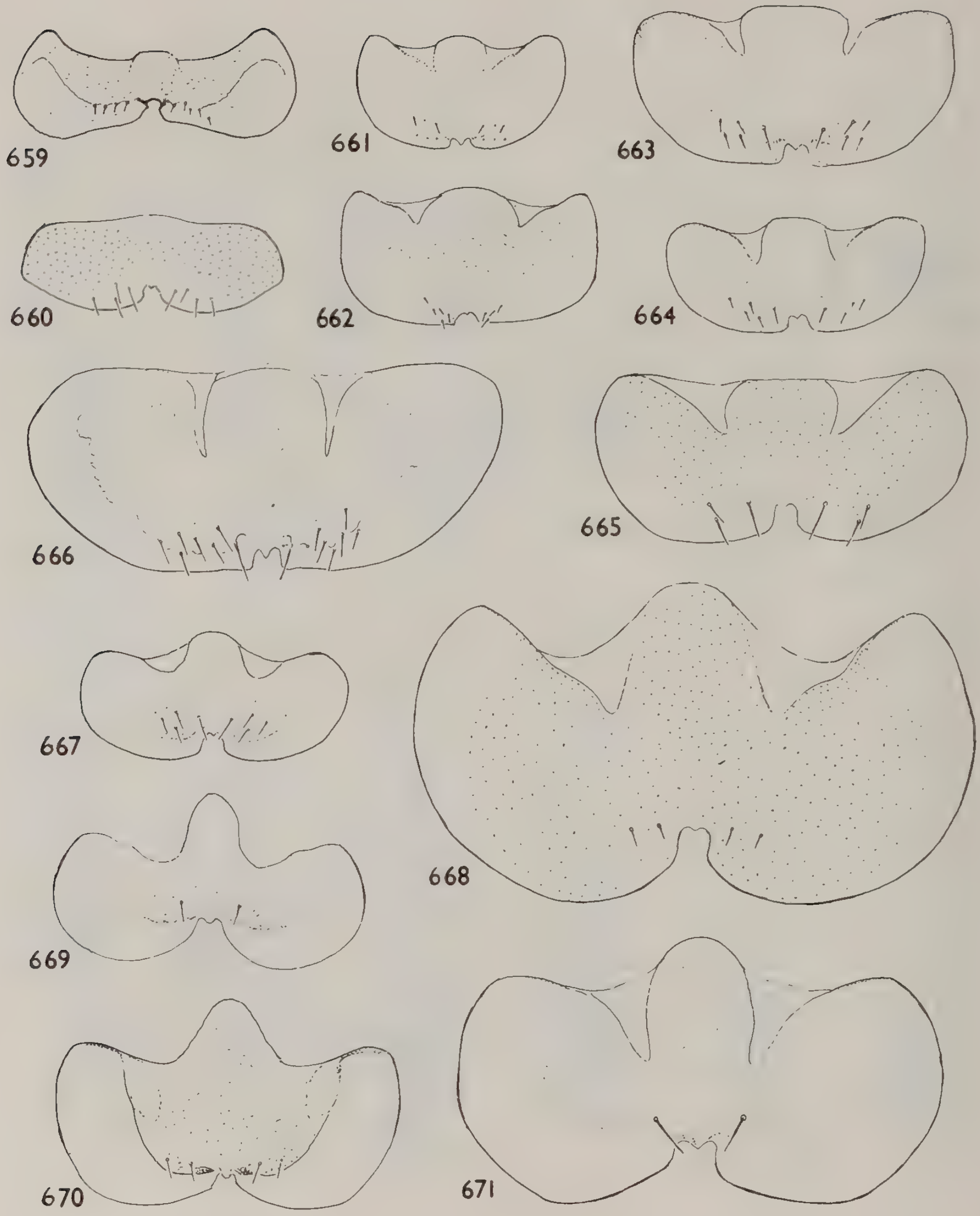
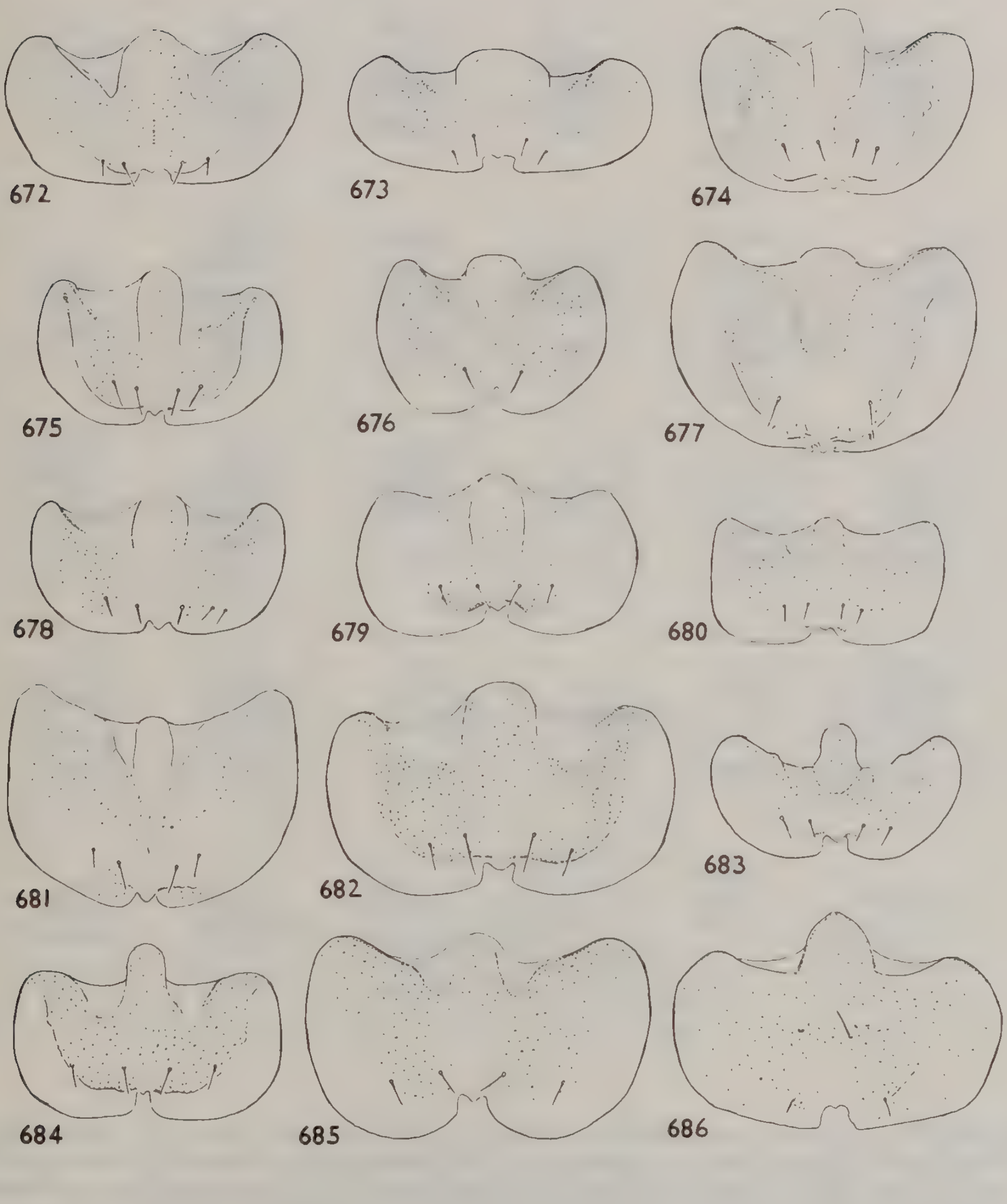
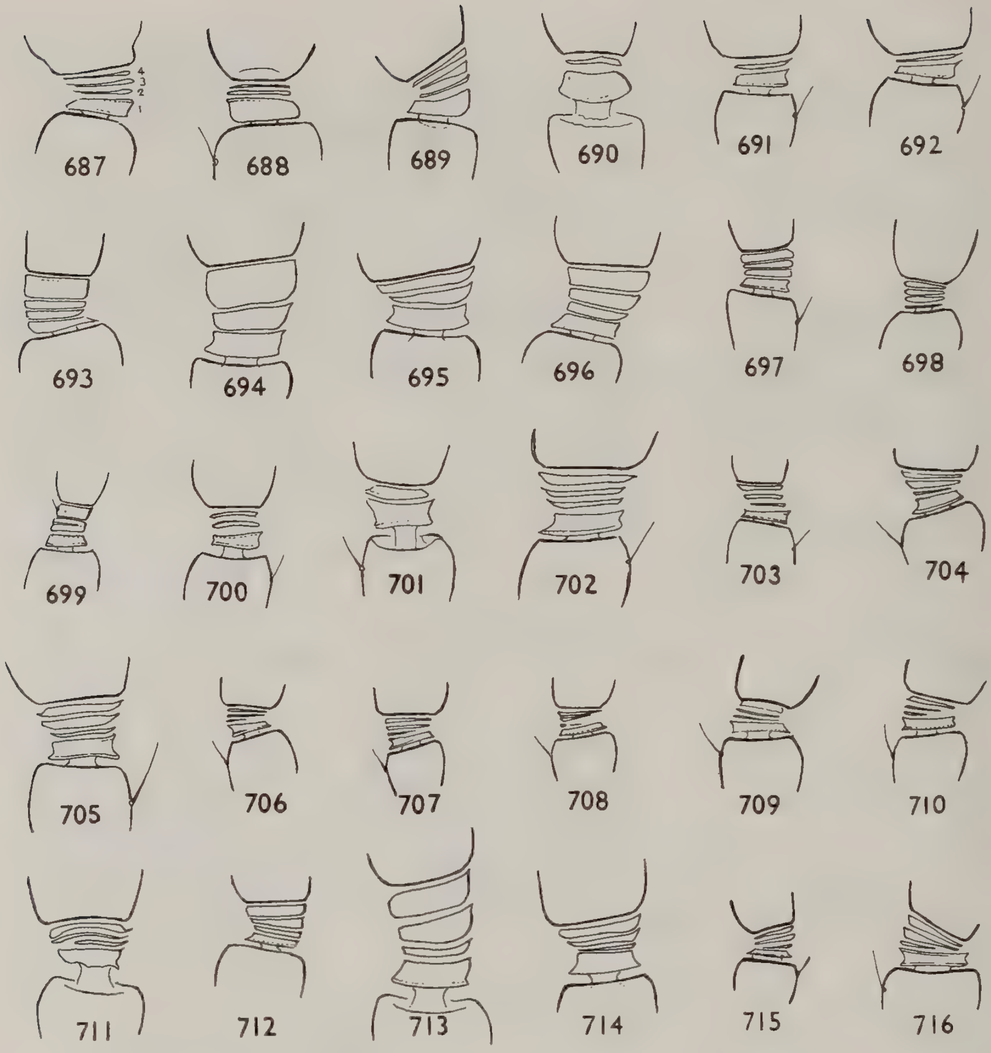
Figs 646–658 Genitalia, males. 646, *Aprostocetus* (*Aprostocetus*) *toddaliae* (Risbec). 647, *A.* (*A.*) *forsteri* (Walker). 648, *A.* (*A.*) *viridinitens* sp. n. 649, *A.* (*A.*) *brachycerus* (Thomson). 650, *A.* (*A.*) *artemisicola* sp. n. 651, *A.* (*A.*) *invidus* (Domenichini). 652, *A.* (*A.*) *calamarius* Graham. 653, *A.* (*A.*) *elongatus* (Förster). 654, *A.* (*A.*) *emesa* (Walker). 655, *A.* (*A.*) *zoilus* (Walker). 656, *A.* (*A.*) *strobilanae* (Ratzeburg). 657, *A.* (*A.*) *fulvipes* (Förster). 658, *A.* (*A.*) *apama* (Walker).



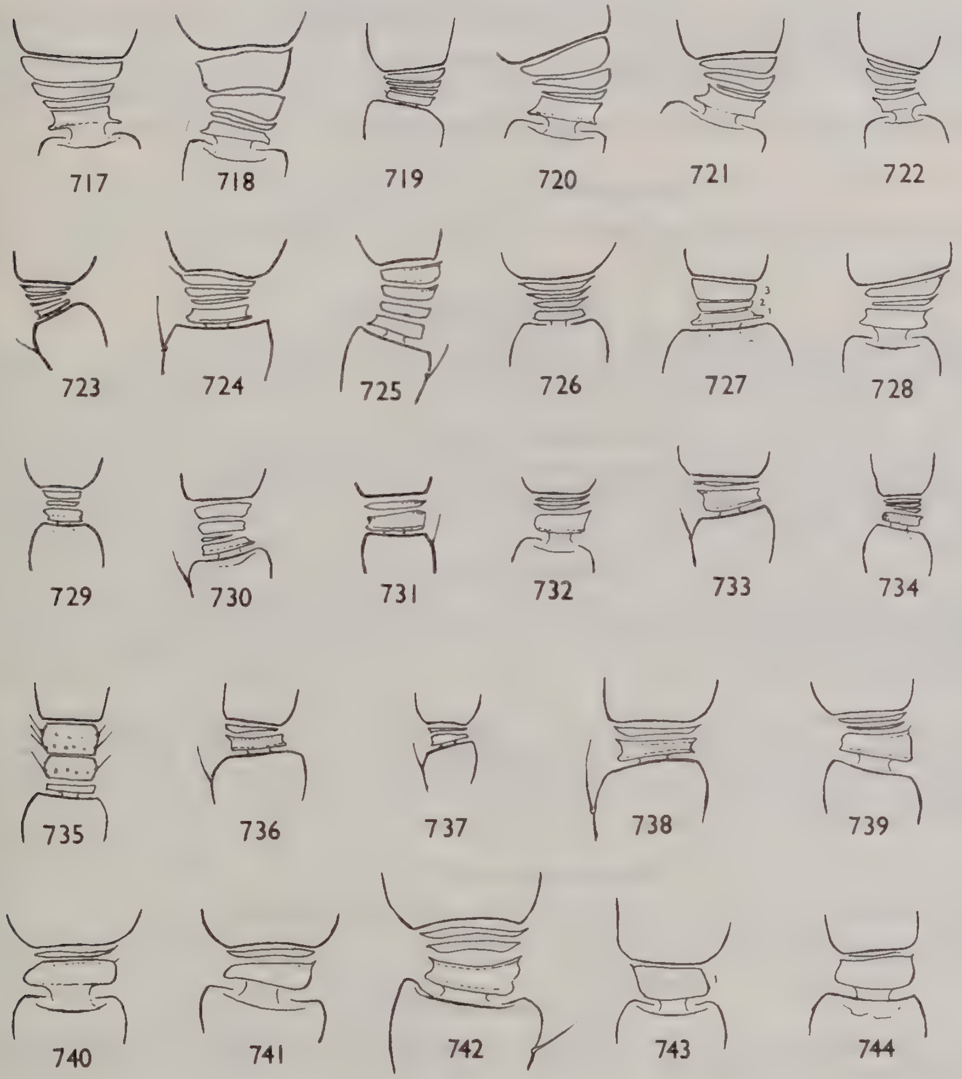
Figs 659–671 Hypopygia, females: anterior margin towards top of plate. 659, *Quadrastichodella eucalypti* (Timberlake). 660, *Tetrastichomyia clisiocampae* Ashmead. 661, *Apotetrastichus lesbiacus* sp. n. 662, *A. postmarginalis* (Bouček). 663, *Minotetrastichus loxotoma* (Graham). 664, *M. treron* sp. n. 665, *M. ecus* (Walker). 666, *Melittobia acasta* (Walker). 667, *Neotrichoporoides biogradensis* sp. n. 668, *N. mediterraneus* Graham. 669, *Kolopterna salina* sp. n. 670, *K. quartensis* sp. n. 671, *Sigmophora brevicornis* (Panzer).



Figs 672–686 Hypopygia, females. 672, *Aprostocetus* (*Chrysotetrastichus*) *celtidis* (Erdös). 673, *A.* (*C.*) *cebennicus* sp. n. 674, *Aprostocetus* (*Aprostocetus*) *zosimus* (Walker). 675, *A.* (*A.*) *menius* (Walker). 676, *A.* (*A.*) *caudatus* Westwood. 677, *A.* (*A.*) *clavicornis* (Zetterstedt). 678, *A.* (*A.*) *eurytomae* (Nees). 679, *A.* (*A.*) *orithyia* (Walker). 680, *A.* (*A.*) *gratus* (Giraud). 681, *A.* (*A.*) *escherichi* (Szelényi). 682, *A.* (*A.*) *abydenus* (Walker). 683, *A.* (*A.*) *capnopterus* sp. n. 684, *A.* (*A.*) *flavifrons* (Walker). 685, *A.* (*A.*) *emesa* (Walker). 686, *Chaenotetrastichus grangeri* (Erdös).



Figs 687–716 Antennal anelli, females; pedicellus at bottom of each figure. 687, *Apotetrastichus postmarginalis* (Bouček). 688, *A. lesbiacus* sp. n. 689, *Minotetrastichus loxotoma* (Graham). 690, *M. ecus* (Walker). 691, *M. platanellus* (Mercet). 692, *M. treron* sp. n. 693, *Neotrichoporoides viridimaculatus* (Fullaway). 694, *Sigmophora brevicornis* (Panzer). 695, *Anaprostocetus acuminatus* (Ratzeburg). 696, *Aprostocetus* (*Ootetrastichus*) *mycerinus* (Walker). 697, *A.* (*O.*) *percaudatus* (Silvestri). 698, *Aprostocetus* (*Coriophagus*) *eurytus* (Walker). 699, *A.* (*C.*) *miridivorus* (Domenichini). 700, *Aprostocetus* (*Chrysotetrastichus*) *oreophilus* (Förster). 701, *A.* (*C.*) *celtidis* (Erdös). 702, *Aprostocetus* (*Aprostocetus*) *asperulus* (Graham). 703, *A.* (*A.*) *diplosidis* Crawford. 704, *A.* (*A.*) *eurytomae* (Nees). 705, *A.* (*A.*) *westwoodii* (Fonscolombe). 706, *A.* (*A.*) *caudatus* Westwood. 707, *A.* (*A.*) *longicauda* (Thomson). 708, *A.* (*A.*) *leucone* (Walker). 709, *A.* (*A.*) *anodaphus* (Walker). 710, *A.* (*A.*) *menius* (Walker). 711, *A.* (*A.*) *zosimus* (Walker). 712, *A.* (*A.*) *phillyreae* (Domenichini). 713, *A.* (*A.*) *clavicornis* (Zetterstedt). 714, *A.* (*A.*) *pausiris* (Walker). 715, *A.* (*A.*) *meridionalis* sp. n. 716, *A.* (*A.*) *serratularum* sp. n.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Figs 717–744 Antennal anelli, females. 717, *Aprostocetus* (*Aprostocetus*) *orithyia* (Walker). 718, *A.* (*A.*) *gratus* (Giraud). 719, *A.* (*A.*) *apiculatus* sp. n. 720, *A.* (*A.*) *citrinus* (Förster). 721, *A.* (*A.*) *lycidas* (Walker). 722, *A.* (*A.*) *deplanatus* (Walker). 723, *A.* (*A.*) *emesa* (Walker). 724, *A.* (*A.*) *fulvipes* (Förster). 725, *A.* (*A.*) *apama* (Walker). 726, *A.* (*A.*) *calamarius* Graham. 727, *A.* (*A.*) *luteus* (Ratzeburg). 728, *A.* (*A.*) *collega* (Ratzeburg). 729, *Aceratoneuromyia* sp. 730, *Nesolynx glossinae* (Waterston). 731, *Eutetrastichus adalia* (Walker). 732, *E. galactopus* (Ratzeburg). 733, *E. szoecsi* (Erdös). 734, *Peckelachertus diprioni* Yoshimoto. 735, *Tetrastichomyia clisiocampae* Ashmead. 736, *Sphenolepis pygmaea* Nees. 737, *Mischotetrastichus petiolatus* (Erdös). 738, *Chaenotetrastichus grangeri* (Erdös). 739, *Tetrastichus miser* (Nees). 740, *Oomyzus coccinellae* (Kurdjumov). 741, *O, galerucivorus* (Hedqvist). 742, *Cecidotetrastichus vacuna* (Walker). 743, *C. anysis* (Walker). 744, *Tamarixia monesus* (Walker).

Species inquirendae

Aprostocetus arathis (Walker)

Cirrospilus Arathis Walker, 1839*e*: 29. Lectotype ♂, GREAT BRITAIN: near London (BMNH), designated by Graham (1961*b*: 54) [examined].
Aprostocetus arathis (Walker) Graham, 1961*b*: 54.

Referred to the *caudatus*-group by Graham (1961*b*) without more definite information.

Tetrastichus cecidomyiae de Stefani

Tetrastichus cecidomyiae de Stefani, 1887: 110. ? Syntypes, SICILY (not located).

Tetrastichus crinicornis (Perris)

Eulophus crinicornis Perris, 1840: 405–406. Syntypes, FRANCE (not located).
Tetrastichus crinicornis (Perris) Domenichini, 1966*b*: 26.

Tetrastichus lasiopterae Lindeman

Geniocerus lasiopterae Lindeman, 1881: 387. Syntypes, U.S.S.R. (not located).
Tetrastichus lasiopterae (Lindeman) Domenichini, 1966*a*: 189.

Tetrastichus graminum Erdös

[*Geniocerus annulatus* Förster; Kurdjumov, 1913: 251. Misidentification.]
Tetrastichus graminum Erdös, 1969: 48; 1971: 248. [Replacement name for *annulatus* Förster sensu Kurdjumov.]

The name '*annulatus* Kurdjumov' was stated by Erdös (1969: 48) to be preoccupied; however, it was a misidentification as Kurdjumov attributed it to Förster. It is not clear what Erdös intended by his *graminum*. His collection contains a very large mixed series under that name and when examining it I could not reach a definite conclusion.

Tetrastichus populi (Kurdjumov)

Geniocerus populi Kurdjumov, 1913: 250, 251. Syntypes, U.S.S.R. (not located).
Tetrastichus populi (Kurdjumov) Domenichini, 1966*a*: 189.

Aprostocetus totis (Walker)

Cirrospilus Totis Walker, 1839*a*: 320. Lectotype ♂, GREAT BRITAIN: Isle of Wight (BMNH), designated by Graham (1961*b*: 60) [examined].

Referred to the *lycidas*-group of *Aprostocetus* by Graham (1961*b*: 60) but not more closely identified.

Tetrastichus tyrtaeus (Walker)

Cirrospilus Tyrtaeus Walker, 1839*a*: 306. ? Holotype ♀, GREAT BRITAIN: near London (not located).
Tetrastichus tyrtaeus (Walker) Walker, 1848: 149.

Aprostocetus xeuxes (Walker) **comb. n.**

Cirrospilus Xeuxes Walker, 1839*a*: 301. ? Syntype ♂, GREAT BRITAIN: near London (NMI) [examined].

Three specimens under this name in BMNH do not agree with the description. There is also a Walker specimen, a ♂, in the Haliday collection (NMI) with my serial number 1246. It belongs to the *lycidas*-group of *Aprostocetus*.

Excluded genera and species

WINNEMANA Crawford

Winnemana Crawford, 1911: 620. Type-species: *Winnemana argei* Crawford, by monotypy.

Synonymized with *Cirrospilus* Westwood (Eulophinae) by Graham (1975: 281). The genus *Ootetrastichoides* Ii, 1936, was also synonymized with *Cirrospilus* by Graham (1975: 281).

SEYRIGINA Risbec

Seyrigina Risbec, 1952: 381. Type-species: *Seyrigina gracile* Risbec, by monotypy.

I have examined the type ♀ of *S. gracile*, which belongs to the subfamily Eulophinae.

Acknowledgements

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I. D. Gauld

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